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AN EVALUATION OF THE POTENTIAL USE OF FEDERALLY OWNED LANDS FOR PARK-N-RIDE FACILITIES

ALAN M. VOORHEES AND ASSOCIATES,
INCORPORATED

PREPARED FOR
ENVIRONMENTAL PROTECTION AGENCY

JANUARY 1976

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FINAL REPORT

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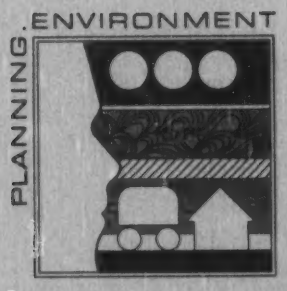

PLANNING ENVIRONMENT INTERNATIONAL

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FINAL REPORT

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PREPARED FOR

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX - SAN FRANCISCO, CALIFORNIA

CONTRACT NO. PP5090560B

JANUARY 1976

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The study presents a preliminary analysis of the potential use of Federally owned lands in the San Francisco region (Bay Area) for use as park-n-ride facilities. During the conduct of the study, ten tasks were undertaken, ranging from inventorying lands owned by the Federal government and reviewing local transit development programs to reviewing the Federal land management process and conducting on-site field inspections of the most promising sites.

On the basis of the site visits, eight parcels were identified for more detailed examination of the concept of using Federal lands for park-n-ride facilities. In summary, some overall guidelines are presented for implementing this concept.

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The findings, conclusions, and recommendations are those of the Contractors and do not necessarily reflect the views of the U. S. Environmental Protection Agency. Similarly, the authors are solely responsible for the accuracy of statements and interpretations contained herein.

TABLE OF CONTENTS

	Page
LIST OF FIGURES	iv
LIST OF TABLES	v
INTRODUCTION	1
Background	2
Conceptual Framework	3
THE FEDERAL LAND MANAGEMENT PROCESS: AN OVERVIEW	7
TRANSIT PLANNING AND POTENTIAL DEMAND FOR PARK-N-RIDE FACILITIES	13
Transportation Planning Agencies	13
Approaches to Park-n-Ride Facilities	15
IDENTIFICATION OF POTENTIAL PARK-N-RIDE FACILITIES ON FEDERALLY OWNED LANDS	21
Location of Potential Park-n-Ride Facilities	21
On-Site Investigations	22
Summary of On-Site Investigations	49
SUMMARY	55
Other Environmental Considerations	55
Planning Guidelines for Implementation	58
APPENDIX. SUMMARY OF MAJOR FEDERALLY OWNED LANDS IN THE BAY AREA, BY AGENCY AND LOCATION	60

LIST OF FIGURES

		Page
1.	Flow Chart for Investigating the Potential Use of Federal Lands for Park-n-Ride Facilities	4
2.	Organizational Structure of Public Building Services	9
3.	GSA Specifications for Site Investigation Report	10
4.	Comparison of Utilities for an Auto Driver and a Park-n-Ride Trip	16
5.	Location of Critical Parking Areas	17
6.	Regional Transportation Corridors	18
7.	Study Site Location Map	23
8.	On-Site Investigations: Study Sites 1 and 2	24
9.	On-Site Investigations: Study Sites 3, 4, and 5	25
10.	On-Site Investigations: Study Site 6	26
11.	On-Site Investigations: Study Sites 7 and 8	27
12.	On-Site Investigations: Study Sites 9, 11, 12, 16, 21, and 22	28
13.	On-Site Investigations: Study Sites 10, 13 and 26	29
14.	On-Site Investigations: Study Sites 14 and 15	30
15.	On-Site Investigations: Study Site 17	31
16.	On-Site Investigations: Study Site 18	32
17.	On-Site Investigations: Study Site 19	33
18.	On-Site Investigations: Study Site 20	34
19.	On-Site Investigations: Study Site 23	35
20.	On-Site Investigations: Study Site 24	36
21.	On-Site Investigations: Study Site 25	37
22.	Typical Hydrocarbon Emissions Patterns (LDV)	57

LIST OF TABLES

		Page
1.	List of Federal Real Property Holding Agencies . . .	8
2.	Federal Lanes with Potential for Use as Park-n-Ride Facilities	50
3.	Federal Agencies and Transit Operators Involved in Potential Park-n-Ride Facilities	52

ABSTRACT

The study presents a preliminary analysis of the potential use of Federally owned lands in the San Francisco region (Bay Area) for use as park-n-ride facilities. During the conduct of the study, ten tasks were undertaken, ranging from inventorying lands owned by the Federal government and reviewing local transit development programs to reviewing the Federal land management process and conducting on-site field inspections of the most promising sites.

In the establishment of evaluation criteria for the park-n-ride sites, an analysis was made of the regional transportation corridors and location of critical parking areas. Based to a large extent on accessibility to transit services, 26 sites were identified for on-site field trips. Suitability of the sites for park-n-ride facilities was evaluated as a function of a variety of factors including physical features and layout, current use and intensity of usage, convenient and ready access to the streets, and proximity to transit services.

On the basis of the site visits, eight parcels were identified for more detailed examination of the concept of using Federal lands for park-n-ride facilities. In summary, some overall guidelines are presented for implementing this concept, including consideration of other environmental and transportation objectives.

INTRODUCTION

This study presents an overview of the planning for park-n-ride facilities in the San Francisco Region (also referred to as the Bay Area) and a preliminary analysis of the potential use of Federal lands for such facilities. Included in the analysis has been an inventory review of lands owned by civil agencies of the Federal Government. The major sites and locations have been summarized in the appendix. An important consideration throughout the study has been the relation of potential sites to the Transit Development Program prepared by the Metropolitan Transportation Commission (MTC)[1] and existing transit services.

The locations examined in this investigation have been limited to "Federally owned lands." Two other types of lands related to Federal activities have not been analyzed and may deserve consideration in a more comprehensive evaluation. These are

- Federal lands owned by defense agencies
- Lands leased by Federal agencies

Federal lands used by defense agencies are rather extensive in the Bay Area, but were regarded as generally unavailable for public purposes such as park-n-ride facilities. A listing of these lands--their locations and responsible defense agencies--is available from surveys conducted by the General Services Administration (GSA).[2]

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[1] Metropolitan Transportation Commission, "Transit Development Program," May 1974.

[2] See, for example, "Real Property Owned by the United States Department of Defense (Military Functions), As of June 30, 1974," prepared by the General Services Administration, 1975.

Lands leased by Federal agencies in the Bay Area are also quite significant, but were beyond the scope of this investigation. It should be noted, however, that leased lands do offer potential for use as park-n-ride facilities. In discussions with GSA representatives, it was indicated that it is possible for lease contracts to be renegotiated to provide for site modifications that could accommodate park-n-ride facilities. This issue is recommended for further investigation if it is determined to be an appropriate and desirable Federal action.

BACKGROUND

Impetus for this investigation began in meetings of the San Francisco regional Federal Executive Board (FEB) and a desire of the Federal agencies to evaluate "actions" that could be taken by their respective agencies to reduce energy consumption and improve air quality. In particular, it was felt programs that Federal employees could participate in related to their travel patterns would be desirable. With this in mind, it was decided to evaluate the potential use of Federally owned lands for park-n-ride lots. In addition to developing a program for Federal employees, another purpose of the program was to develop positive ways of contributing to the region's Transportation Control Plan (TCP).

"Park-n-ride" refers to bus patrons driving their own vehicles to an intermediate point and then leaving their cars to ride transit on to their final destination. This should be distinguished from "kiss-n-ride" activity, where commuters are chauffeured to a change-of-mode station (e.g., bus, train, or rapid transit) by their spouses, kiss their spouses goodbye, and board the transit vehicle as the spouses drive the family cars back home. Basically, park-n-ride is an alternative means of accomplishing the feeder or collection function. In areas of low or medium population density, where a high level of bus service (frequency and coverage) is not practical, park-n-ride activity provides an alternative.

If the remaining portion of the trip can be made on the bus with travel time competitive with that of the automobile, then park-n-ride is a viable alternative. It is especially attractive coupled with rapid transit or express bus operations, particularly if the parking site is coincident with the commencement of the nonstop, express portion of the route.

Experience to date with park-n-ride lots has shown a clear pattern of higher use of auto mode to the bus in more sparsely populated areas.[1] It appears that the split or allocation between driver and passenger is a more complex one relating to income, car ownership, and parking availability. Wherever park-n-ride has been a significant factor, it has been found to have an expanded service area well beyond that of the feeder or collector bus system.

CONCEPTUAL FRAMEWORK

The conceptual framework for investigating the potential use of Federally owned lands for park-n-ride facilities is shown in Figure 1 and consists of 10 tasks. The emphasis of this study was on the collection and synthesis of existing data and plans, with minimal quantitative analysis of alternative plans or forecasts of usage. Judgmental analysis has been used in defining the "areas of interest" fo. park-n-ride facilities.

The first task was the collection of an inventory of land owned by civil agencies of the Federal Government. The information was provided by the Space Management Division of Public Building Services, GSA.[2] This

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[1]Alan M. Voorhees & Associates, Inc., "Honolulu Park and Ride," August 1973. _____ "Blue Streak Bus Rapid Transit Demonstration Project," Seattle, Washington, March 1973.

[2]General Services Administration, "Real Property Owned by United States Government, As of June 30, 1974," 1975.

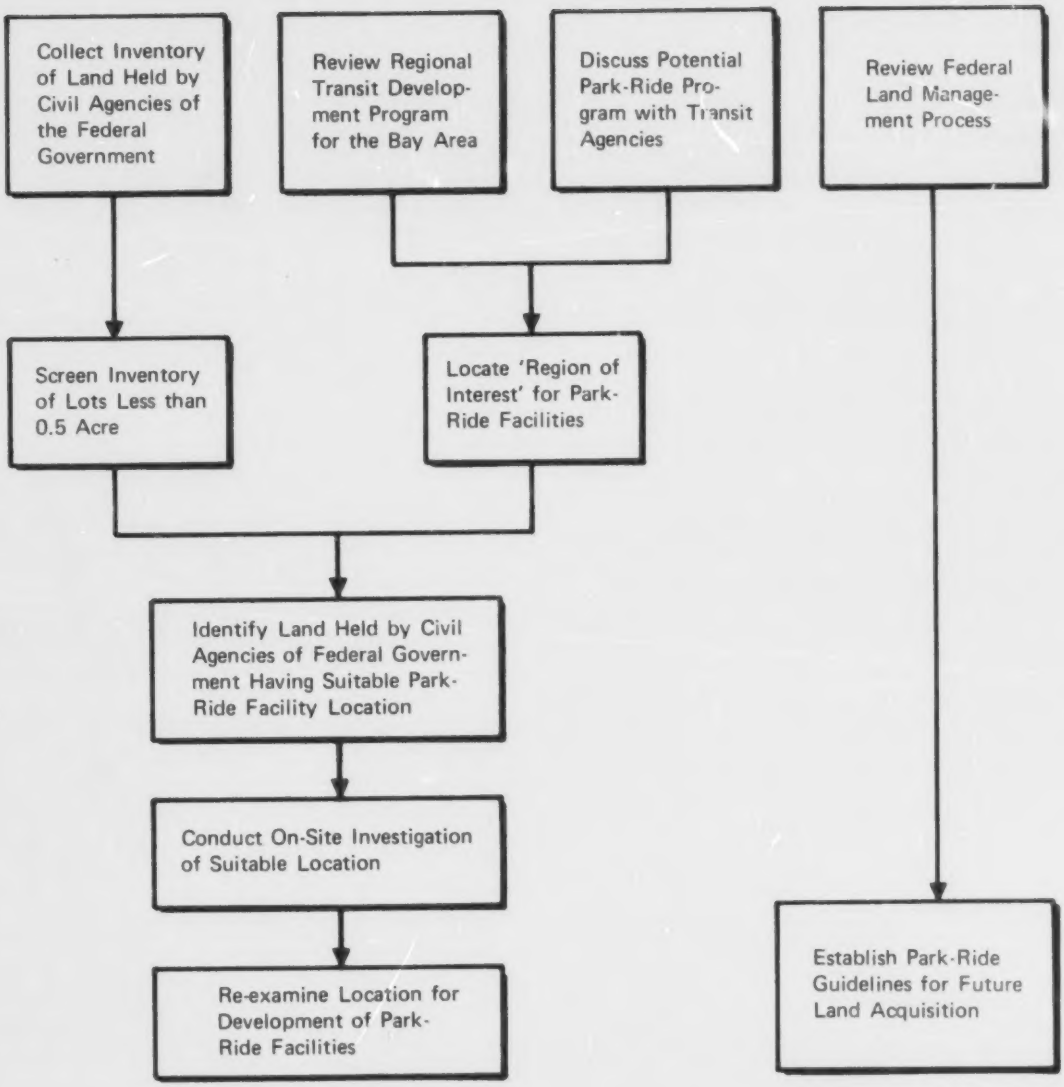
Collect Inventory of Land Held by Civil Agencies of the Federal Government
Review Regional Transit Development Program for the Bay Area
Discuss Potential Park-Ride Program with Transit Agencies
Review Federal Land Management Process
Screen Inventory of Lots Less than 0.5 Acre
Locate 'Region of Interest' for Park-Ride Facilities
Identify Land Held by Civil Agencies of Federal Government Having Suitable Park-Ride Facility Location
Conduct On-Site Investigation of Suitable Location
Re-examine Location for Development of Park-Ride Facilities
Establish Park-Ride Guidelines for Future Land Acquisition

FIGURE 1. FLOW CHART FOR INVESTIGATING THE POTENTIAL USE OF FEDERAL LANDS FOR PARK-N-RIDE FACILITIES

inventory was current as of June 1974. The information was then screened to eliminate land parcels of less than 0.5 acres, since there are many parcels of land owned by the Federal Government which are very small. These include a large number of parcels owned by the Federal Aviation Administration (FAA) for communication purposes. Parallel with this task was a review of the Transit Development Program prepared by MTC for the nine-county Bay Area.[1] This review concentrated on identifying any plans for developing park-n-ride facilities and revealed that the Bay Area Rapid Transit District (BART) was the principal agency interested in park-n-ride facilities.

As a separate task, interviews with the principal agencies involved in transit operations were also conducted. These discussions revealed that in San Mateo County there was considerable interest on the potential use of park-n-ride satellites to feed the BART station at Daly City. However, concern was expressed that, until the question was resolved of what to do with the commuter railroad service on the Peninsula, there was little prospect for implementing these satellite lots because of the likelihood of attracting passengers away from this service.

Following this review and discussion, "areas of interest" were defined which reflected those areas in which interest had been expressed regarding park-n-ride facilities. To these were added some regional locations where travel corridors converged (e.g., at the Bay bridges and at change-of-mode locations such as the ferry terminals). Further expansion at BART stations beyond those already planned was not considered an "area of interest" because of discussions with the BART staff. This issue is discussed in more detail later. The next task was to compare the screened inventory of Federal land with the areas of interest to determine suitable locations for park-n-ride facilities on Federally owned land. This revealed 26 locations that were suitable. On-site

[1] Metropolitan Transportation Commission, op cit.

investigation of these sites was then conducted to determine if a park-n-ride facility could be incorporated into the site. The results of these investigations are reported later in this report, along with recommendations for those sites that appear to be especially attractive for detailed study.

One further line of investigation was also followed. This involved a review of the Federal land management process to identify ways in which the potential for incorporating a park-n-ride facility into a piece of Federal land could be evaluated prior to the purchase of the site. In this manner, any modification to the site could be evaluated before its purchase. The next section discusses this process in more detail.

THE FEDERAL LAND MANAGEMENT PROCESS: AN OVERVIEW

There are 29 Federal agencies that may hold real property (see Table 1). All other agencies must occupy leased property. GSA is the major agency buying, selling, and leasing property for the Federal Government, although it is not required that it exclusively handle all property transactions. If a Federal agency wishes to dispose of Federal land, it is brought to the attention of the Real Property Division of GSA, which "screens" the property to see if it may be transferred to another agency wishing to acquire land. If no alternative use can be found, then the land is declared "excess" and disposed of through sale or by exchange for an alternative piece of land that is desired by a Federal agency.

The purchase of new land is handled by the Space Management Division of GSA. This division, together with the Real Property Division and the Construction Management Division, comprise the Public Building Services section of GSA as shown in Figure 2.

When land is purchased by the Acquisition Branch of the Space Management Division, a Site Investigation Report is prepared by a project team made up of a representative of the agency that will use the land, an appraiser, architect, engineer, realty officer, and planner--all from GSA. This team prepares a report following the general guidelines set out in Figure 3. Guideline 6 states:

> a. Local public transportation facilities and the extent of use by the public, including a delineation of principal routes and principal terminals from which local transportation services emanate.
>
> b. The availability, cost, and extent of use of public parking facilities within or in proximity to the delineated area. If no area is delineated, discuss the availability, cost, and extent of use of such facilities in or in proximity to the general area or preferred location for the proposed building.

TABLE 1. LIST OF FEDERAL REAL PROPERTY HOLDING AGENCIES[1]

1. American Battle Monuments Commission
2. Central Intelligence Agency
3. Corps of Engineers
4. Department of Agriculture
5. Department of the Air Force
6. Department of the Army
7. Department of Commerce
8. Department of Health, Education, and Welfare
9. Department of Housing and Urban Development
10. Department of the Interior
11. Department of Justice
12. Department of Labor
13. Department of the Navy
14. Department of State
15. Department of Transportation
16. Department of the Treasury
17. Energy Research and Development Administration
18. Environmental Protection Agency
19. Federal Communications Commission
20. General Services Administration
21. Government Printing Office
22. National Aeronautics and Space Administration
23. National Capital Housing Authority
24. National Science Foundation
25. Office of Economic Opportunity
26. Tennessee Valley Authority
27. U.S. Information Agency
28. U.S. Postal Service
29. Veterans Administration

[1] This list does not include all agencies which may occupy or request assignment of space.

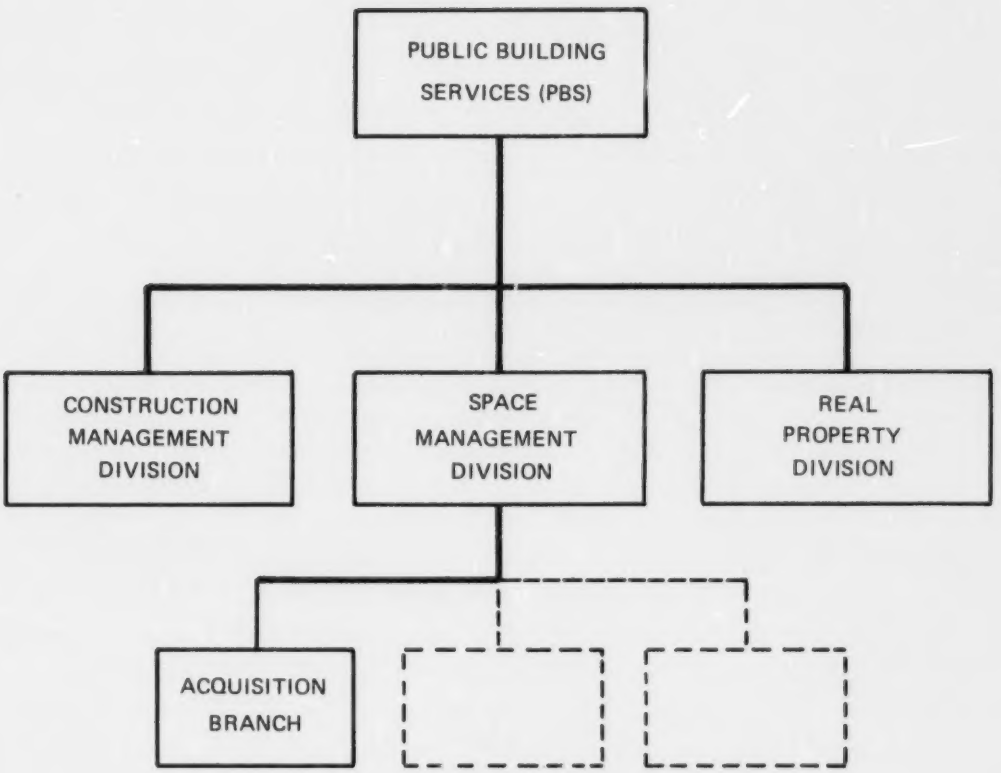

FIGURE 2. ORGANIZATIONAL STRUCTURE OF PUBLIC BUILDING SERVICES

GENERAL SERVICES ADMINISTRATION

SPECIFICATIONS FOR GSA SITE INVESTIGATION REPORT

FORMAT. The report shall be bound in book fashion in the left margin, in a durable cover with identification of the project for which the Site Investigation is being made on the face of the cover. The paper used shall be of size 8 x 10-½ inches. All pages shall be numbered consecutively including all exhibits. Each important heading shall be shown in the Table of Contents. The report shall contain tabulations, schedules, exhibits and other data necessary to set forth all the site selection factors considered by the Site Investigation Team. In order to facilitate their removal for study and review purposes, maps, photographs, and other exhibits included in the addenda shall be placed in 8-¼ x 11-½ inch envelopes which are bound into the report in book fashion in the left margin.

OUTLINE. To provide uniformity for GSA files, the report will be divided into four parts as outlined below. Within these parts the outline may vary to the extent that the character and size of the project and the community in which it is to be located may be such as to call for additional data in some cases, and less data in others. Generally, however, all items must be considered by the Site Investigation Team and included in the report. The omission of any item shall be explained in the report.

PART I – INTRODUCTION

1. **TITLE PAGE.** The Title Page shall include the same information that is shown on the cover, i.e., (1) the name of the project, (2) the name of the city, county and state.

2. **TABLE OF CONTENTS.**

3. **LETTER OF TRANSMITTAL.** The letter of transmittal shall be in the form of a memorandum from the responsible GSA Regional Administrator to the Commissioner, PBS. It shall contain the following information:
   a. The purpose of the report.
   b. The identity of the project.
   c. The date(s) on which the site investigation was made.
   d. The identity of the three outstanding potential sites recommended by the Site Investigation Team, and the estimated acquisition, relocation, and special preparation costs of each of those sites.
   e. Total amount of funds available for site acquisition and relocation.
   f. The recommendations of the Regional Administrator and the effective date of those recommendations.
   g. The signature of the Regional Administrator.

4. **AERIAL PHOTOGRAPH OR MAP.** The delineated area, county and Federal buildings, civic centers, the central business district of the city, urban renewal projects, in or on the periphery of the preferred or delineated area, and the three recommended sites are to be identified on this photograph or map.

PART II – FACTUAL DATA

5. **ECONOMIC CHARACTERISTICS OF THE CITY.**
   a. Population and growth trends.
   b. A description of the economic base of the community.
   c. Economic conditions and data relating to the level of business activity in the community, including the trend and rate of growth, or decline of that activity.
   d. The size and location of the central business district, its rate of growth, or decline, and its direction and rate of expansion (if any).

6. **COMMUNITY FACILITIES.**
   a. Local public transportation facilities and the extent of use by the public, including a delineation of principal routes and principal terminals from which local transportation services emanate.
   b. The availability, cost and extent of use of public parking facilities within or in proximity to the delineated area. If no area is delineated, discuss the availability, cost and extent of use of such facilities in or in proximity to the general area or preferred location for the proposed building.

7. **COMMUNITY PLANNING.**
   a. Summarize results of notification to and consultation with planning agencies and local elected officials for purpose of coordinating Federal projects with development plans and programs of the state, region and locality in which the project is to be located. (FPMR SEC. 101-17.103).
   b. Zoning ordinances, and master plans relating to the preferred or delineated area and the possible effect of those ordinances and plans on the proposed building in respect to setback, height, bulk, off-street parking requirements, and development of the general areas under consideration.
   c. Civic centers, existing, under construction, or planned.
   d. Major thoroughfares and highways in existence or under construction which will have an effect on the area which is preferred or has been delineated as an acceptable location for the proposed building.
   e. Plans for improvement of existing major thoroughfares and highways which will have an effect on the area which is preferred or delineated as an acceptable location for the proposed building.
   f. Urban renewal projects, private or public, existing, under construction, or planned. If a federally assisted urban renewal project within the preferred or delineated area is being planned, give the status of the proposed project and the estimated date by which a going urban renewal project will come into existence as evidenced by a contract between the Local Redevelopment Authority and the Government.

8. **SITE REQUIREMENTS.** This shall be a statement of the specific site requirements as stated in the Site Investigation Directive issued by the Commissioner, Public Buildings Service.

9. **THE SITE INVESTIGATION.**
   a. The date on which the Site Investigation Directive was issued.
   b. The date(s) on which the appropriate public notices and/or advertisements soliciting offers (if any) were issued.
   c. The date(s) on which the Site Investigation was conducted.
   d. The name and official position of each member of the Site Investigation Team. (Include members from other agencies).
   e. Total number of offered, and unoffered, but potential sites inspected by the site team.

GSA Form 1433 (Rev. 2-73)

FIGURE 3. GSA SPECIFICATIONS FOR SITE INVESTIGATION REPORT

PART III – ANALYSIS AND CONCLUSIONS

10. SYNOPSIS OF PROPERTIES OFFERED FOR INSPECTION.

In this section of the report, list the properties offered for inspection, stating the following for each property:

a. Location.
b. Size (dimensions and square area).
c. Name of offeror(s), and the capacity in which he (they) acted in making the offer.
d. Name of purported owner(s).
e. Asking price, if known.
f. Whether the offered site is within the preferred or delineated area.

11. SYNOPSIS OF UNOFFERED BUT POTENTIAL SITES INSPECTED. The following information shall be given for each property inspected:

a. Location.
b. Size (dimensions and square area).
c. Name of purported owner(s).
d. Whether property is within the preferred or delineated area.

12. EVALUATION OF SOCIOECONOMIC FACTORS.

a. Sites shall be evaluated in terms of (a) accessibility by the general public by auto, (b) accessibility by the agency's employees by: 1) public transportation and by 2) auto, (c) accessibility by public transportation to low and moderate income housing, (d) availability of off-street parking, (e) safety for the facility and agency personnel, (f) unemployment and (g) median family income to satisfy E.O. 11512. Where applicable the GSA Site Evaluation Model will be utilized, and the conclusions and ratings made part of the report. Evaluation will include consultation with Federal agencies as appropriate.

b. Summarize results of consultation with HUD regarding availability of low and moderate income housing for employees. (GSA Order PBS 7000.11).

13. ELIMINATION OF UNDESIRABLE SITES.

a. A tabulation, giving the reasons for the elimination of undesirable sites shall be prepared. Sites having similar adverse characteristics, such as too remote, too small, unfavorable topography, too costly, unfavorable surroundings, etc., may be grouped under the appropriate classification. List each site under as many definite classifications as are reasons for its elimination.

b. All sites, except the three outstanding locations that meet the minimum site requirements as stated in the Site Investigation Directive, and are in conformance with GSA policy in respect to the location of Federal buildings as stated in PBS P 1600.5A, shall be eliminated. The three remaining sites shall be discussed in detail under the topic *Recommended Sites*.

14. RECOMMENDED SITES. Each of the recommended sites shall be discussed in respect to conformity to site specifications as set forth in the Site Investigation Directive, and conformity with GSA policy in respect to the location of Federal buildings. The narrative concerning each of the recommended sites shall describe the dimensions of the site, its shape and total area, street frontages, estimated cost including severance damages, if any, and topographical characteristics, and shall discuss whether the recommended site is at a location or within an area for which civic officials have expressed a preference. GSA Form 1239, Recommended Sites-Characteristics, shall be completed for each recommended site and included as an exhibit in Part IV of the report. Any conditions which will result in the expenditure of funds for retaining walls, rock excavation, construction, removal, or relocation of utilities, demolition of structures, special construction features required in the proposed building due to topographical features, or sub-surface conditions shall be explained in detail. An estimate as to the cost of performing any or all necessary work of this type in connection with the construction of the proposed building or preparation of the site, shall be furnished. The most significant advantages and disadvantages of each of the recommended sites shall be discussed. The discussion of the advantages and disadvantages of each site may consider the following, as well as other appropriate factors:

a. Project environmental impact evaluation (GSA Order PBS P 1095.1B).
b. Neighborhood environment, and the existence of objectionable smoke, noise, dust, obnoxious odors, as to effect on project.
c. Sub-surface conditions.
d. The nature of existing on-site improvements and the number of owners and/or tenants to be relocated if the property is acquired.
e. Location in relation to the central business district and the direction and rate of growth (decline) of that area.
f. Zoning and planning considerations having a significant effect on the site and design of the building.
g. Special requirements of agencies which will occupy the building, (Post Office, Court, etc.).
h. Public sentiment.
i. Flood plain evaluation.
j. Historic properties evaluation.

15. CORRELATION. The relative advantages and disadvantages of the recommended sites shall be weighed, due consideration being given to all factors pertinent to the selection of a site. In determining total estimated site costs, those elements of cost set forth on GSA Form 1239 shall be considered together with the estimated site acquisition cost.

16. CONCLUSIONS AND RECOMMENDATIONS. Under this heading, the conclusion of the site team in respect to the first, second and third choice site shall be stated.

17. APPROVAL BY REGIONAL COMMISSIONER, PBS. The Regional Commissioner, PBS, shall indicate approval of the conclusions and recommendations of the Site Investigation Team by affixing his signature to the report. The report shall be forwarded by the Regional Commissioner, PBS, to the Regional Administrator for signature and transmittal to the Commissioner, PBS.

18. FORMAT FOR SITE SELECTION BY THE REGIONAL ADMINISTRATOR. The procedure outlined in item 17 above shall be applicable, except that the Regional Administrator shall make the site selection, and such selection shall be preceded by a statement as to the authority under which he acts.

PART IV – EXHIBITS AND ADDENDA

The following exhibits, appearing in the order as listed below, should be included in each Site Investigation Report. In those instances where a public notice of an intent to conduct a site investigation was not issued, or appropriate maps are not available, such items may be excluded from the report provided the reason for the exclusion is stated.

19. A copy of the Site Investigation Directive issued by the Commissioner, PBS.
20. A copy of the public notice and/or advertisement issued.
21. City map with all sites, offered as well as unoffered, but potential, identified.
22. City transit lines map with recommended sites identified on the map.
23. City zoning map with recommended sites identified on the map.
24. GSA Form 1239 - Recommended Sites - Characteristics, and supplemental narrative data.
25. Photographs of the three recommended sites.
26. References, identity of persons, public records and other sources, providing data which was included in the report.
27. Other appropriate exhibits.

GSA Form 1433 (Rev. 2-73) (BACK)

FIGURE 3 (Continued)

It is in carrying out the investigation associated with this guideline that the possibility of setting aside land for a park-n-ride facility could most easily be addressed. It is therefore recommended that this guideline be redrafted so as to more specifically address the potential for a park-n-ride facility on the site being investigated. The rationale is that, even if there are no currently available Federal lands suitable for the development of park-n-ride facilities, at least a process would be established to ensure that future acquisitions specifically address the possibility of such a use.

TRANSIT PLANNING AND POTENTIAL DEMAND FOR PARK-N-RIDE FACILITIES

In an examination of the possible use of Federal lands for park-n-ride facilities, the most important feature from a transportation perspective is the consistency of any proposed facility or network of facilities with the existing transportation system and plans covering the next 5- to 10-year period. This section presents a brief summary of the Bay Area's transportation system and future plans for the region.

TRANSPORATION PLANNING AGENCIES

The main responsibility for regional transportation planning in the nine-county Bay Area rests with MTC, which was created in 1971 by the California Legislature. In June 1973, as part of its regional transportation planning activities, a regional plan was adopted by MTC.[1] As part of its periodic updating requirements, MTC prepared a Transit Development Program in May 1974 to cover the period 1975 to 1984.[2] This program formed part of the basis for this first update. Although MTC is the designated regional transportation planning agency, there are many other agencies responsible for transportation decisions in the area. These include:

Federal Government

Urban Mass Transportation Administration (UMTA)
Environmental Protection Agency (EPA)

State Government

California Department of Transportation (Caltrans)

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[1] Metropolitan Transportation Commission, "MTC Regional Transportation Plan," June 1973.

[2] _____, "Transit Development Program," May 1974.

Regional Government

Association of Bay Area Governments (ABAG)
Bay Conservation and Development Commission (BCDC)
Bay Area Air Pollution Control District (BAAPCD)

Transit Districts

Golden Gate Bridge, Highway and Transportation District (GGBHTD)
Marin County Transit District (MCTD)
Santa Clara County Transit District (SCCTD)
Alameda-Contra Costa Transit District (AC Transit)
Bay Area Rapid Transit District (BARTD)
San Mateo Transit District

Transit Operations

San Francisco Municipal Railway
Santa Rosa
Vallejo
Napa

Transit service in the Bay Area has expanded greatly over the past few years. The focus of this expansion has been the BART system, which opened with the Fremont line in September 1972. This was followed by the Richmond line in January 1973, the Concord line in May 1973, and the Daly City line in November 1973. However, with this very visible emphasis on BART, it would be incorrect to infer that transit service in the Bay Area is a regionwide system. The multiple agencies cited above result in a mixture of operations that are more or less self-contained in nature. Due to this heterogeneity, it is difficult to identify a uniform policy which would be appropriate to the use of park-n-ride facilities.

The only operator that extensively relies on park-n-ride facilities is BART. In 1974, nearly 33 percent of all persons using BART were park-n-ride passengers. All other operators in the region place considerably less emphasis on the park-n-ride mode.[1] The apparent

[1]Bay Area Rapid Transit District, Department of Marketing and Research, "Passenger Profile Study II," January 1975.

reason for this is that the park-n-ride mode is only viable for longer interregional trips; since BART is the major supplier of interregional transit service, use of the park-n-ride alternative is concentrated with the BART service. The conclusion that park-n-ride is only viable for longer trips appears intuitively correct, and it can be demonstrated quantitatively by using the economic concept of "consumer utility," which expresses numerically the value or utility an individual places on a particular modal alternative. The idea is that the higher the utility, the more likely the individual is to choose a particular mode. Figure 4 shows how the rate of utility increase of the park-n-ride mode exceeds the rate of increase of the auto mode for trips longer than 10 miles. Hence, if the trip is longer than 10 miles, a person is becoming more likely to choose the park-n-ride alternative than he is to choose an auto for the entire trip. For trips less than 10 miles, the reverse is true; in this case, likelihood of choosing the auto driver trip is increasing at a faster rate than the park-n-ride trip. The travel market for which park-n-ride is most viable, therefore, has the following characteristics:

- Relatively long trips
- Trips in congested corridors
- Trips to destinations that have high parking costs

These, then, were the criteria used in defining areas where park-n-ride facilities would be most appropriate. These areas are shown in Figure 5.

APPROACHES TO PARK-N-RIDE FACILITIES

To approach the overall locational issue of park-n-ride lots, it is necessary to understand where the major regional transportation corridors are located in the Bay Area. These are shown in Figure 6. In the establishment of a park-n-ride facility, there are three general ways such a service may be provided. These are briefly discussed below:

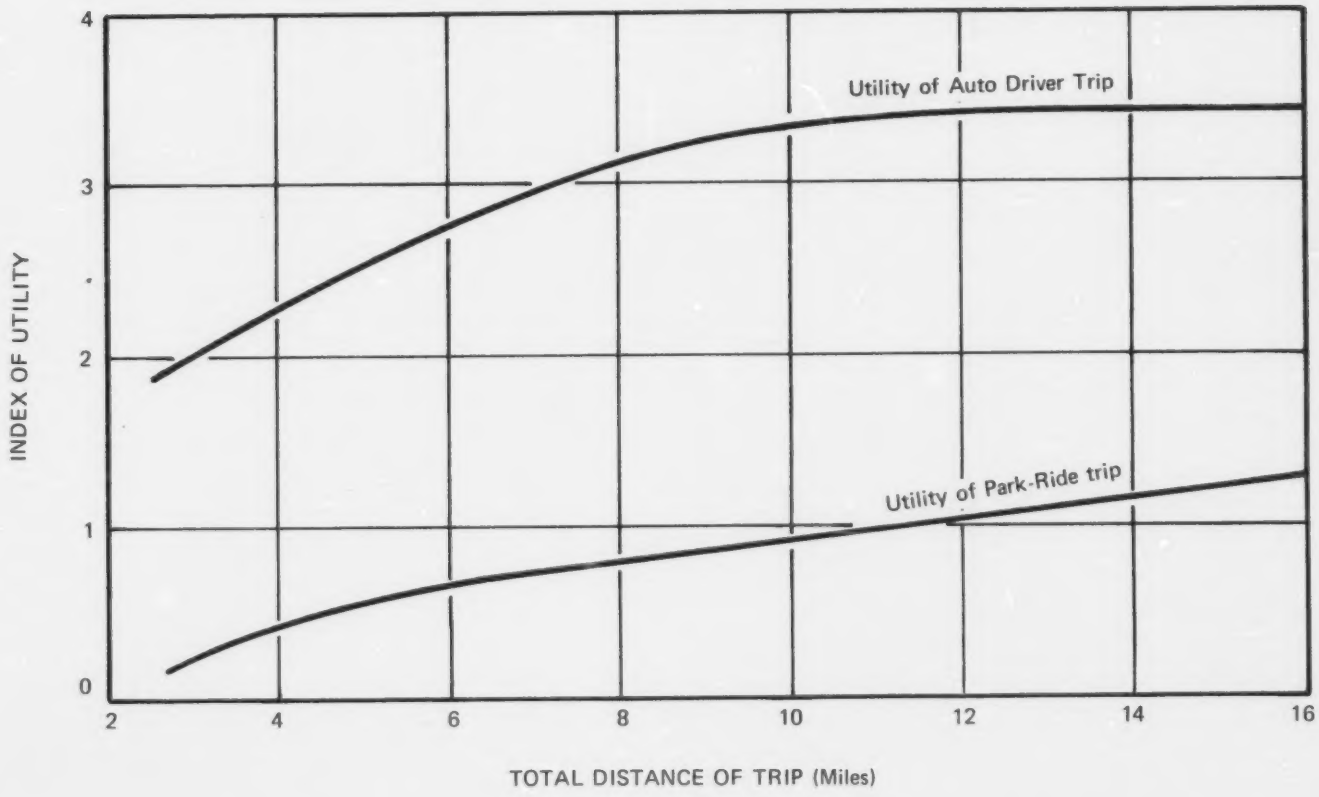


FIGURE 4. COMPARISON OF THE UTILITIES FOR AN AUTO DRIVER AND A PARK-N-RIDE TRIP

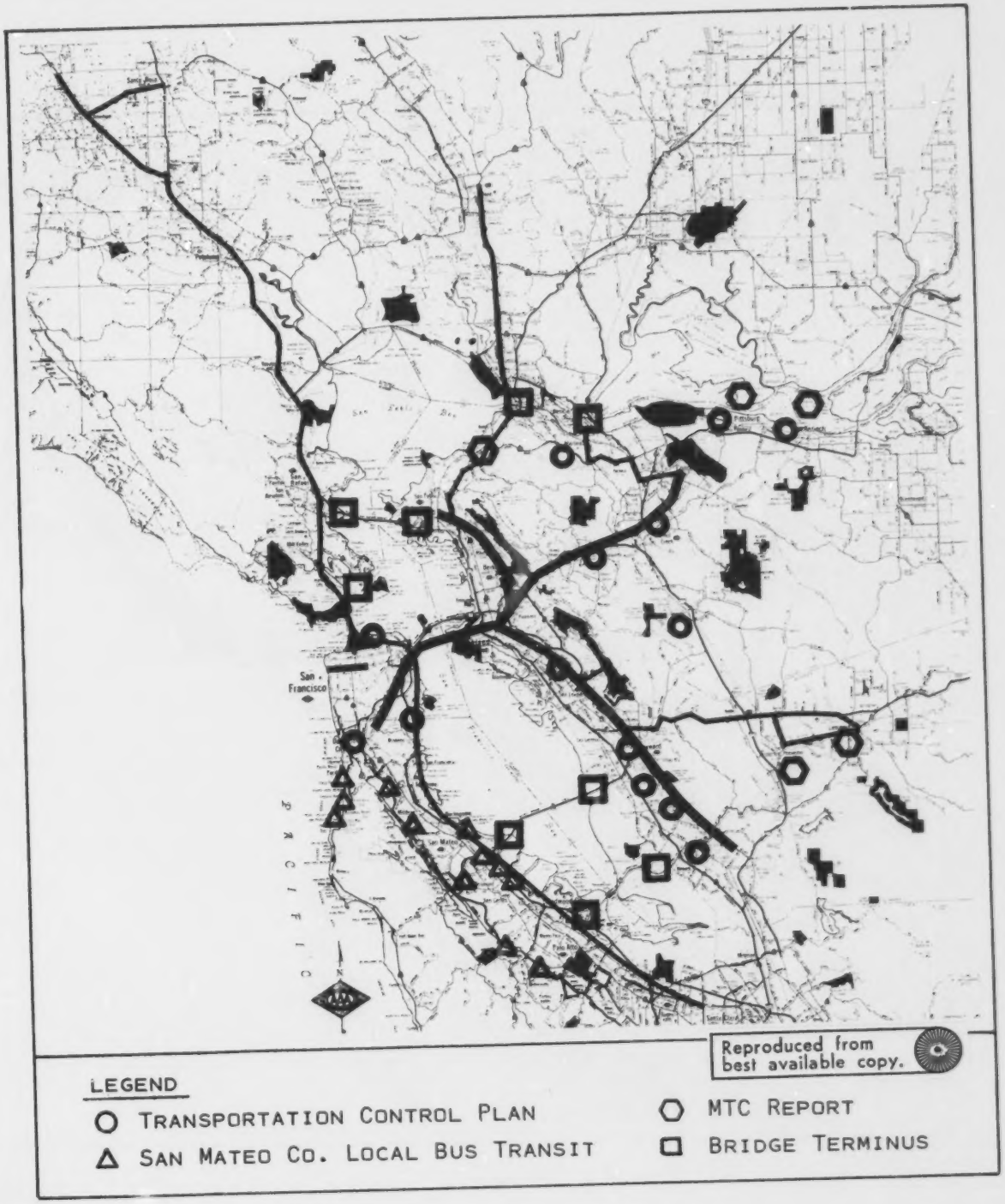


FIGURE 5. LOCATION OF CRITICAL PARKING AREAS

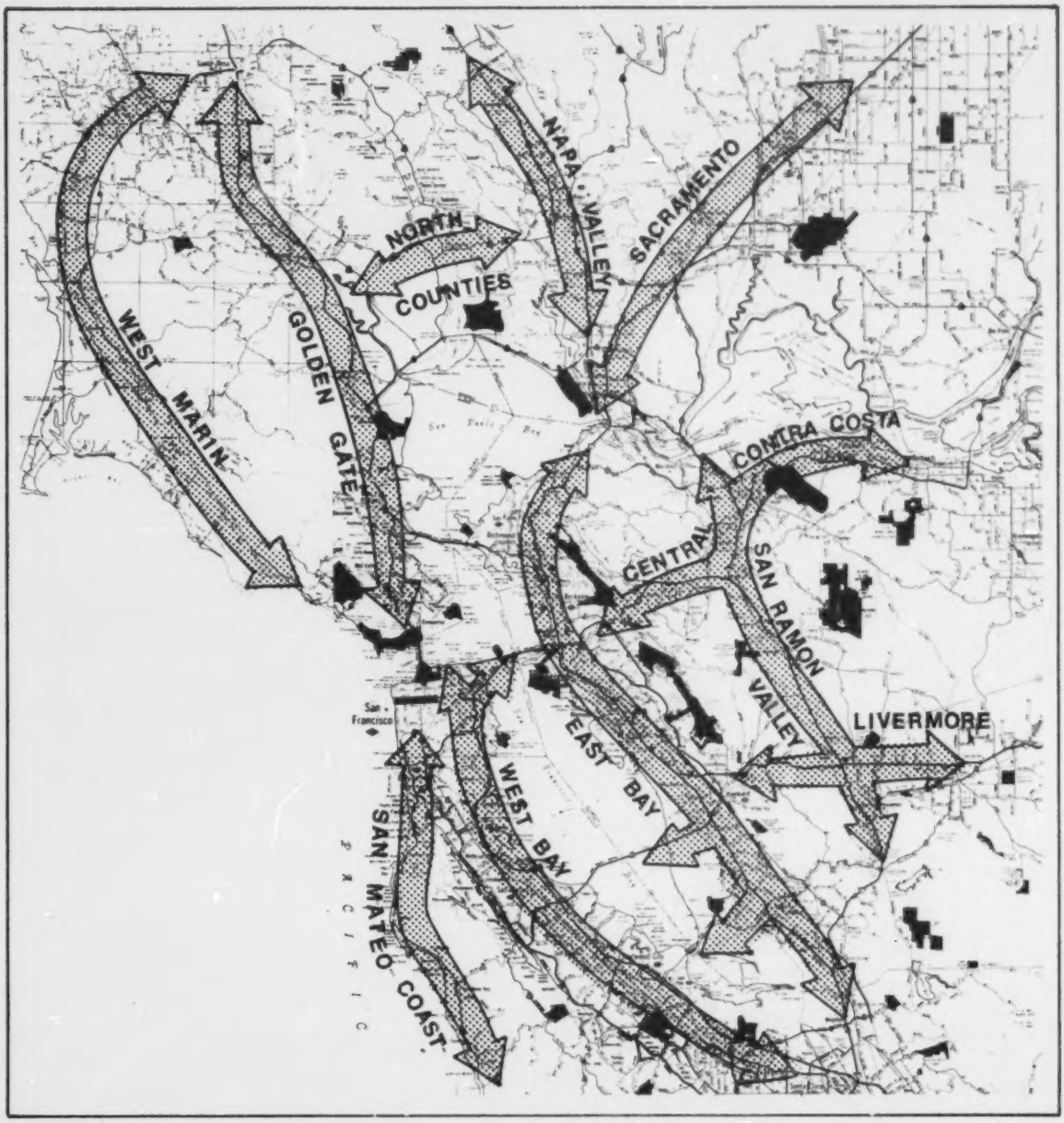


FIGURE 6. REGIONAL TRANSPORTATION CORRIDORS

Source: Metropolitan Transportation Commission

- In close proximity to major transit stations
- In satellite lots away from transit stations, with shuttle service from the lot to the station
- In satellite lots away from transit stations, with a fixed-route feeder system from the lot to the station

First, a lot may be located in close proximity to each of the 33 BART stations, in which case a park-n-ride passenger driving to the nearest BART station parks his car and uses BART to reach his final destination. This is the predominant type of service existing at present, with over 5,000 transit passengers using this mode of access daily. The majority of these 5,000 passengers are commuters who park their cars at the station all day, thus limiting the use of the parking facility for off-peak passengers. It seems likely in the short to medium term that there will be a transfer of emphasis from peak to off-peak usage. This would be accomplished by peak-period commuters transferring to an expanded transit feeder service, with the possibility of a complementary policy on parking prices being used to reinforce this transfer. The rationale for this approach is the belief that this is the most cost-effective approach for expanding BART ridership. A feeder bus service using either fixed routes, a shuttle service from satellite terminals, or a door-to-station dial-a-ride service is cheapest on a passenger-mile basis during peak periods, while in off-peak periods the park-n-ride alternative is seen as being cheaper. Currently, BART estimates the cost of parking space represents a subsidy of 75 cents per trip (assuming it is only used by one vehicle during the day). Hence, if a feeder service could be provided for less than 37.5 cents per trip, the marginal cost of providing a transit feeder service is superior to expanding the parking lot. As new development occurs in the vicinity of BART stations, the opportunity cost of the parking space will increase beyond 75 cents. Thus, the marginal breakeven point for providing a transit feeder service will also increase, and the trend to continue expanding the transit feeder service will therefore continue.

The second type of service is the satellite lot away from the primary station, with a complementary small-vehicle shuttle between the lot and the station using headways of less than 5 minutes. This would be similar to the system operating at San Francisco International Airport. It appears that if such a service can be shown to be cost-effective relative to other alternatives, it would have the greatest potential for using Federal lands. The service would operate only during the peak periods, with the vehicles providing a local dial-a-ride service during the off-peak periods. The lots could utilize existing facilities such as shopping centers, churches, and Federal facilities, would have a capacity between 10 and 50 vehicles per lot, and would be located within 2 to 4 miles of the BART station. At present, this type of service is being investigated in the Walnut Creek area and appears to have potential.

The third type of service is a derivative of the second, in that a satellite terminal would be used, but it would be located 7 to 10 miles from the BART station, and a fixed-route feeder system would be used with headways between 10 and 15 minutes rather than a shuttle service. Again, feeder service would probably be limited to the peak period. Such a service probably has potential in the Dublin/Livermore area and in the Pittsburg/Antioch area. The fixed-route service would replace the shuttle service, since the cost of servicing the satellite terminal with anything but a fixed-route service would be prohibitive.

In summary, then, there are three alternative types of transit service that provide potential for using park-n-ride facilities. The most attractive, from the perspective of utilizing Federal lands, are the alternatives utilizing satellite terminals with fixed-route or shuttle service to and from the BART system. The provision of such a service, however, will involve coordination with the local transit operator, the interregional operator--BART--and the owner of the park-n-ride facility--a Federal Government agency.

IDENTIFICATION OF POTENTIAL PARK-N-RIDE FACILITIES ON FEDERALLY OWNED LANDS

As described in the introduction, the identification of potential park-n-ride facilities began with an inventory of Federally owned lands. By and large, this data was available from GSA.[1] From the raw inventory data, information was compiled on lands owned in the nine-county Bay Area. As stated previously, only civil agencies were considered to avoid problems associated with defense clearances and accessibility. To further screen the Federal land parcels, a 0.5-acre cutoff limit was imposed to eliminate the many small parcels that are maintained by Federal agencies. These were generally considered to be too small for any significant park-n-ride facility conversion projects. The results of the inventory task and preliminary screening are presented in tabular form in the appendix. The summary has been organized by county and according to the Federal agency currently in possession of the property. Additional information has also been provided on sizes of buildings on the land, general setting of the land parcel (i.e., urban, rural), and the specific city in which each parcel is located.

LOCATION OF POTENTIAL PARK-N-RIDE FACILITIES

Following the inventory screening phase, information gleaned from discussions with the various transportation planning and transit operation agencies was used to locate "regions of interest" with Federally owned land parcels. The overall purpose of this task was the identification of land held by Federal agencies having a suitable location for park-n-ride lots. No consideration was given to suitability, current use, or availability for the actual provision and conversion to such a use. Thus, the

[1] See, for example, "Real Property Owned by United States Government, As of June 30, 1974," prepared by General Services Administration, 1975.

overriding factors in these considerations were the regional transportation needs and ways in which park-n-ride lots strategically located could provide a convenient means (and thereby an incentive) for change-of-mode travel to transit. Figure 7 illustrates the general locations of 26 Federal parcels that generally satisfied the criteria established above. From the figure, it can be seen that the sites are, to a large extent, dispersed over the entire region.

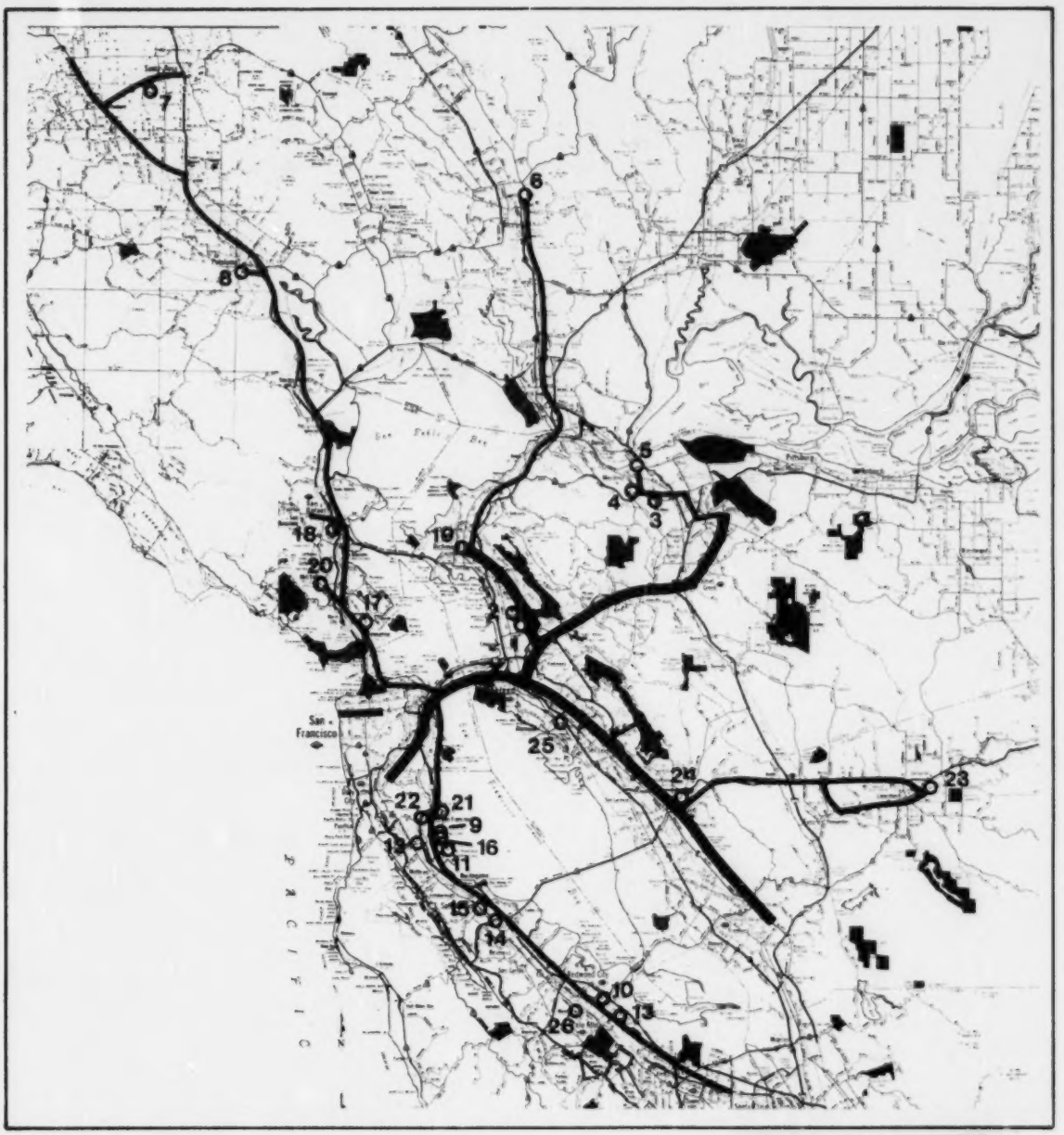
Having met the locational and size criteria, the next step in the investigation was to assess the suitability of each location for potential conversion to park-n-ride facilities. This task was completed with an on-site visit to each of the 26 locations. Within this context, the suitability of each site was evaluated as a function of a variety of factors, including:

- Physical features--terrain, grading, surface characteristics, number of buildings on land parcel, and number of parking spaces
- Current use--type of activity observed on land, especially with respect to usage and availability of parking spaces
- Accessibility--convenient and ready access to the facility and its parking spaces
- Proximity to transit services--the distance to transit service, type of transit service, and frequency of service

The results of these site visits are summarized in the following section. In addition to a detailed site map (Figures 8 through 21), a brief summary of the on-site investigation is presented. (Note: The study site location numbers correspond to those used in Figure 7.)

ON-SITE INVESTIGATIONS

To properly assess the potential for park-n-ride lots on the 26 parcels selected as meeting the locational criteria, on-site investigations were made of each location. A summary of the salient features of each parcel is given below. The corresponding figures present the type and nature of transit service available to each of these sites.



Reproduced from best available copy.

FIGURE 7. STUDY SITE LOCATION MAP

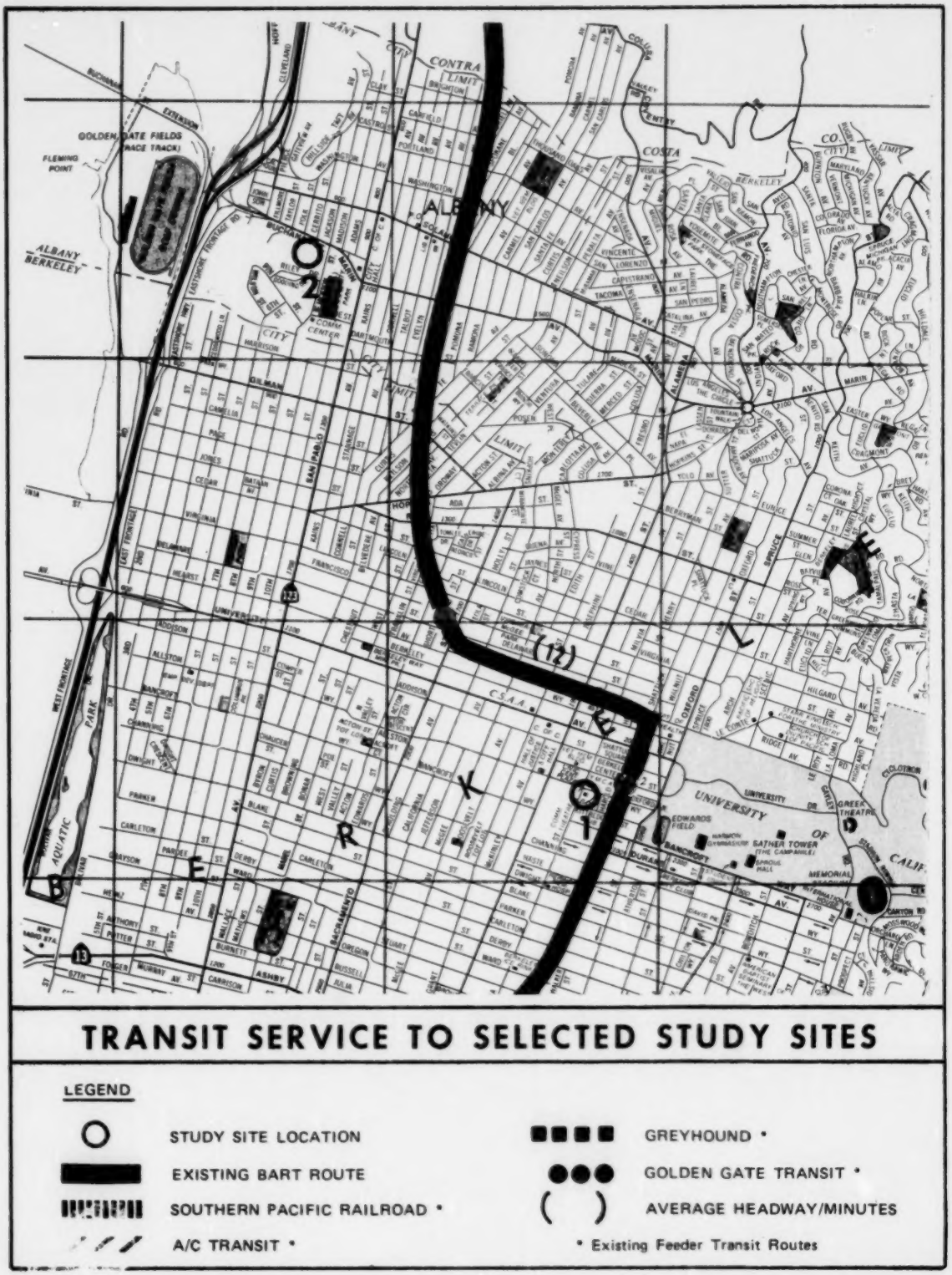


FIGURE 8. ON-SITE INVESTIGATIONS: STUDY SITES 1 AND 2

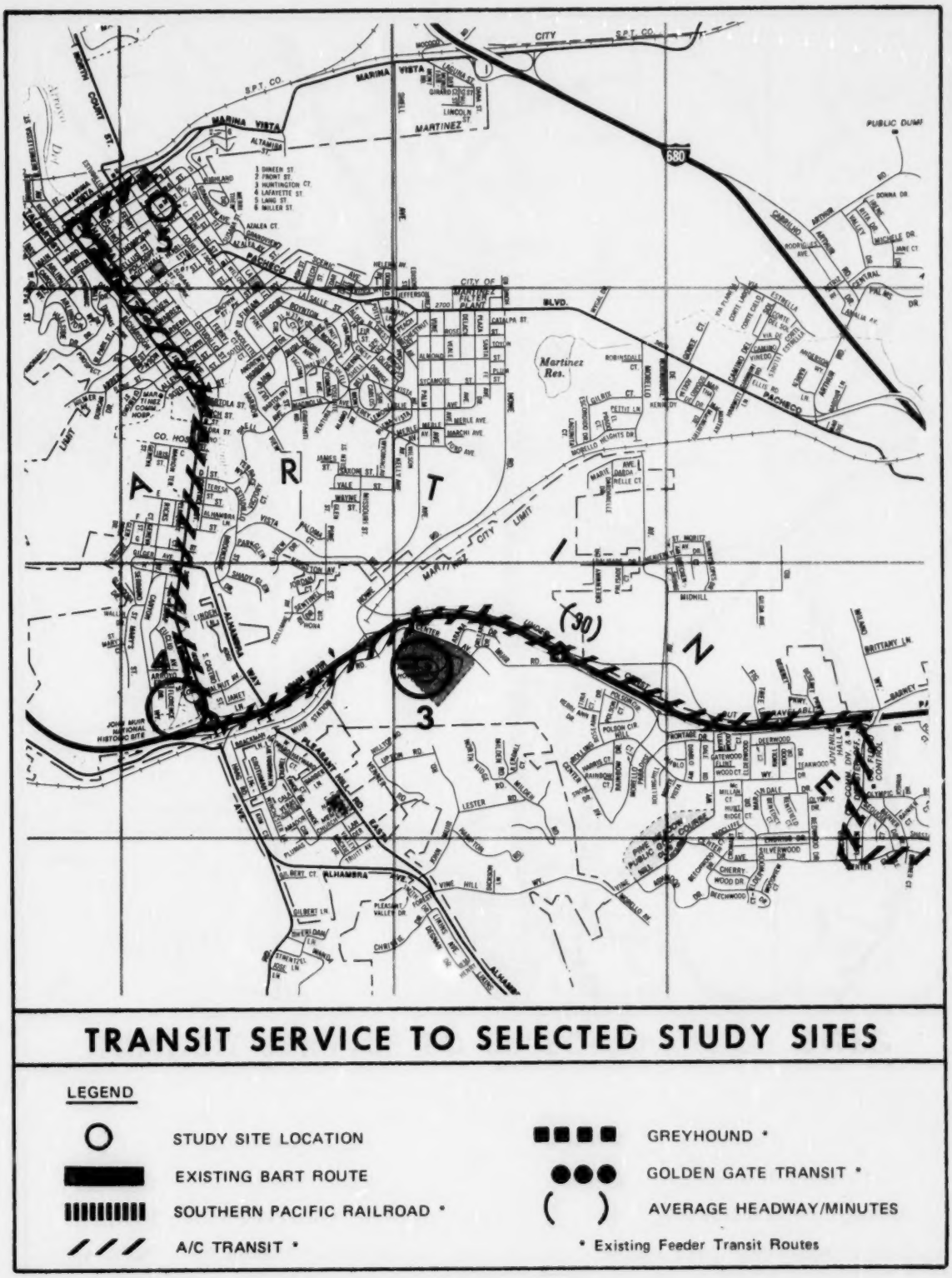


FIGURE 9. ON-SITE INVESTIGATIONS: STUDY SITES 3, 4 AND 5

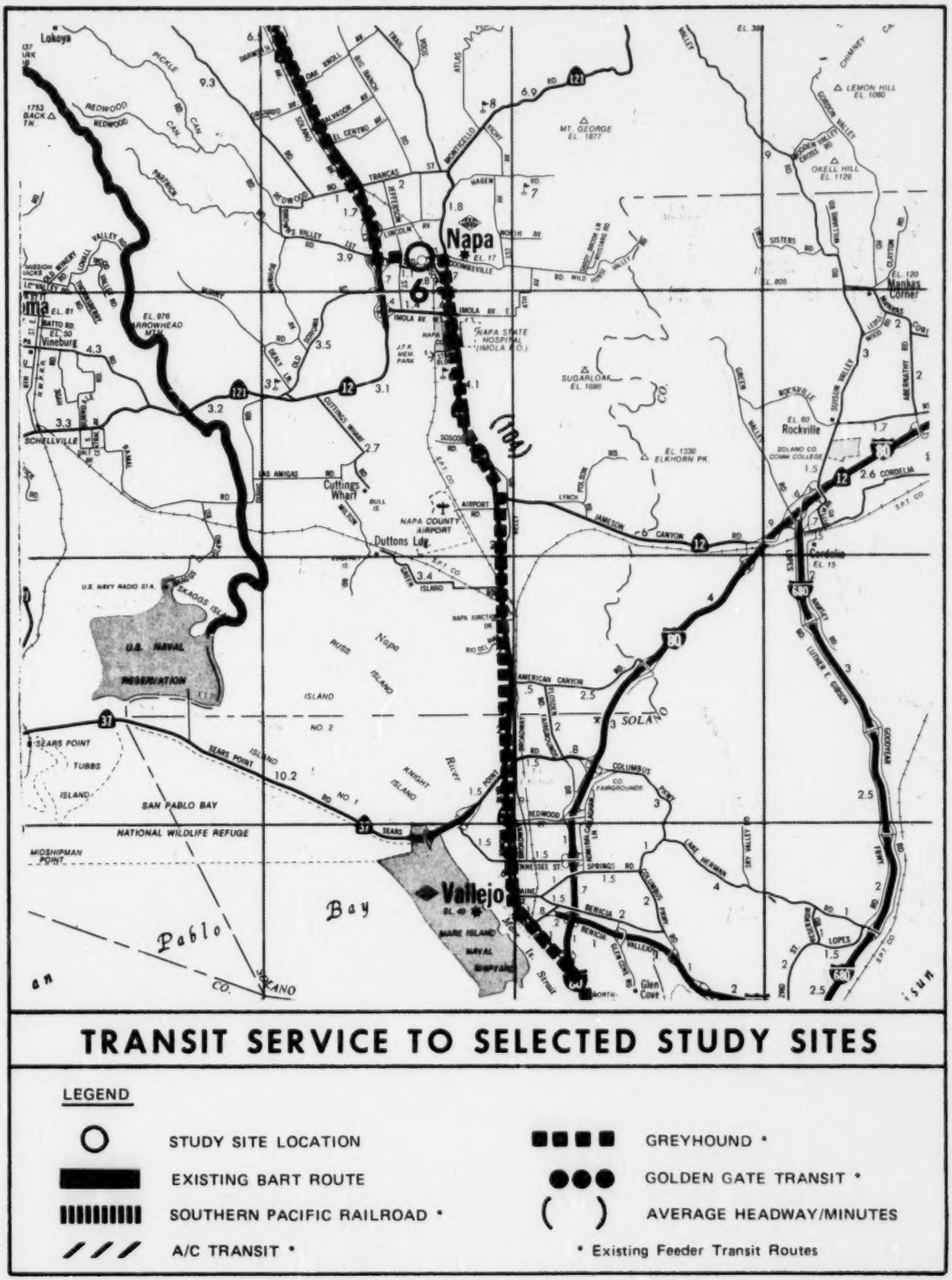


FIGURE 10. ON-SITE INVESTIGATIONS: STUDY SITE 6

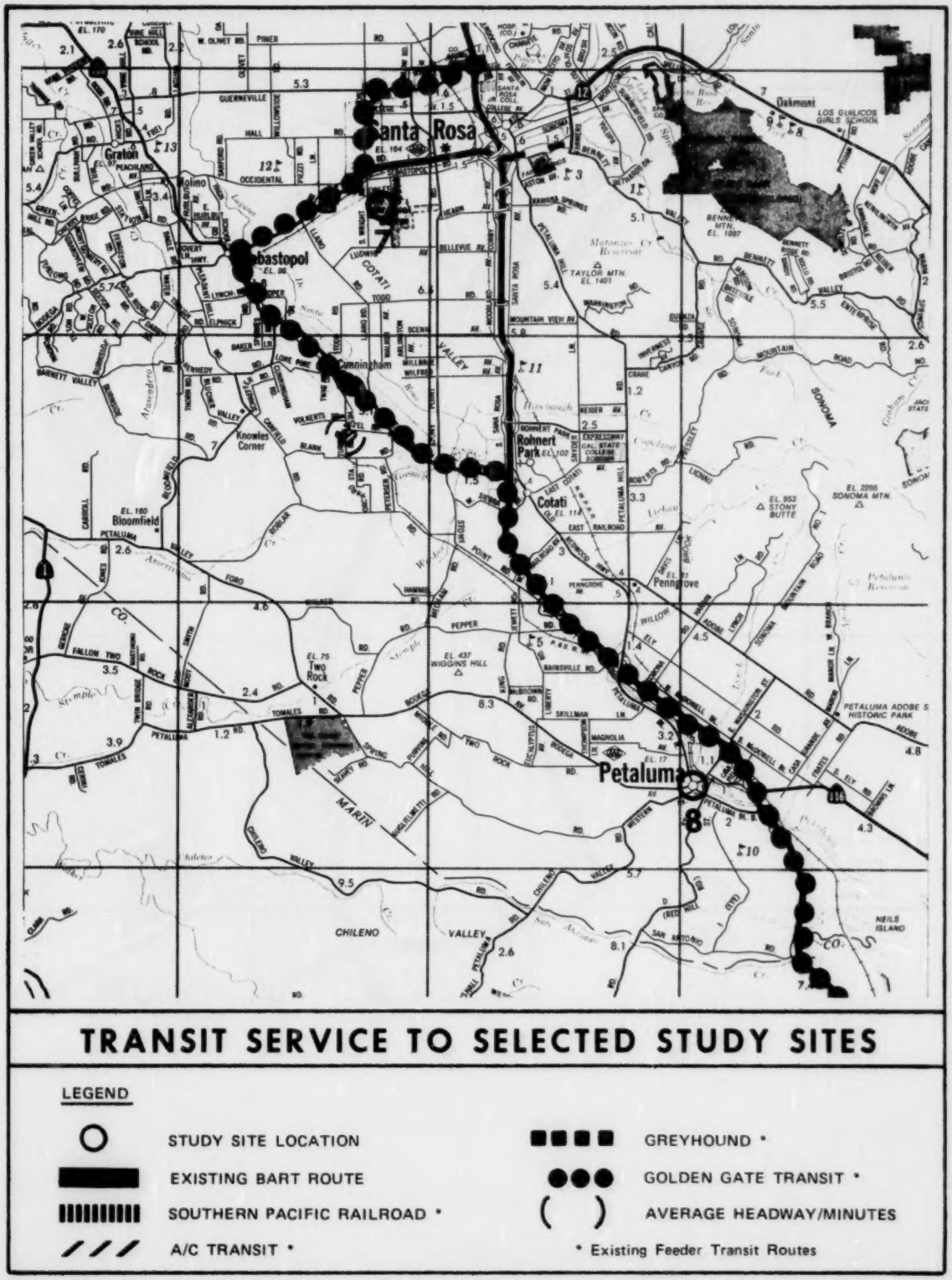


FIGURE 11. ON-SITE INVESTIGATIONS: STUDY SITES 7 AND 8

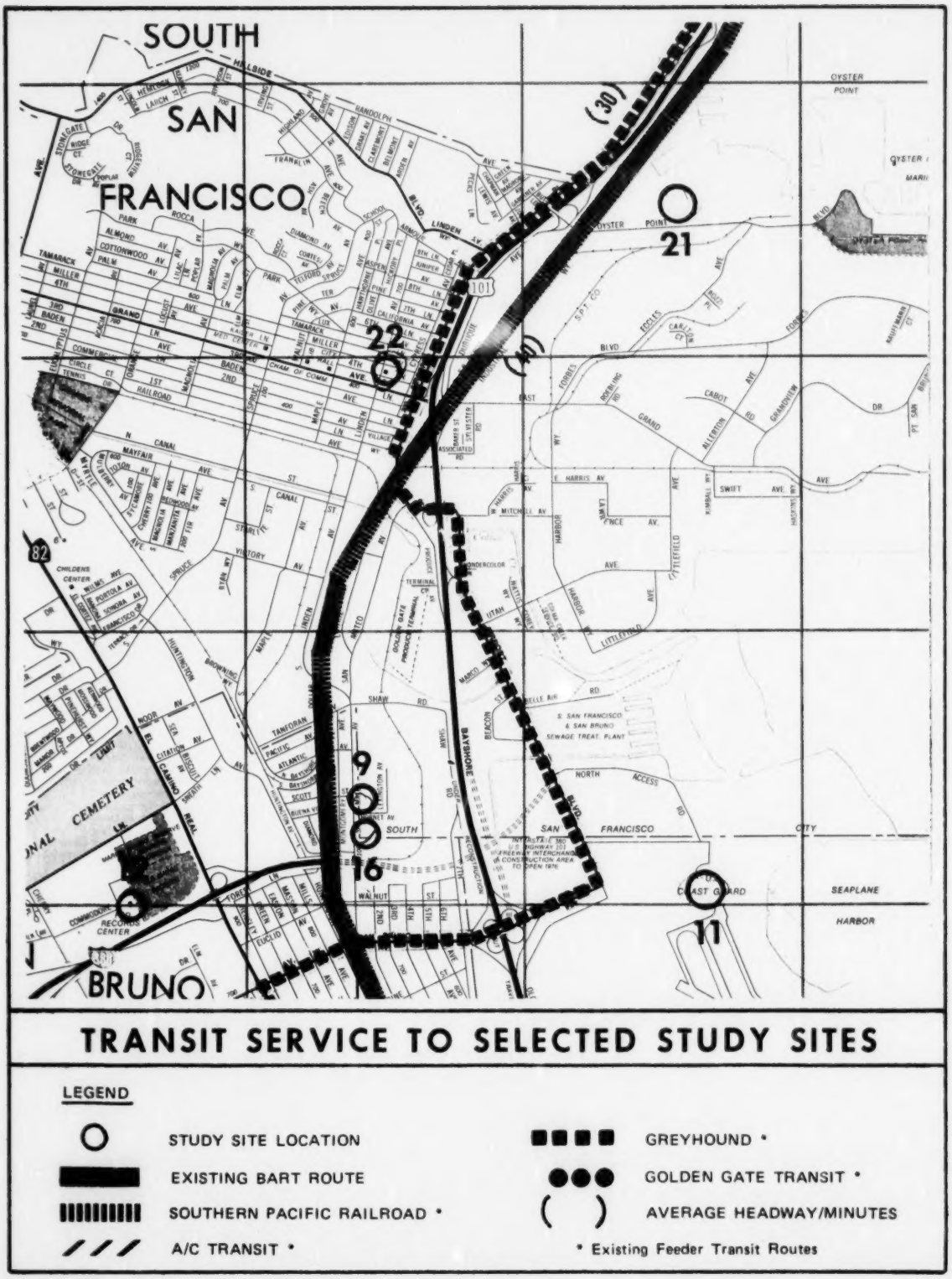


FIGURE 12. ON-SITE INVESTIGATIONS: STUDY SITES 9, 11, 12, 16, 21, AND 22

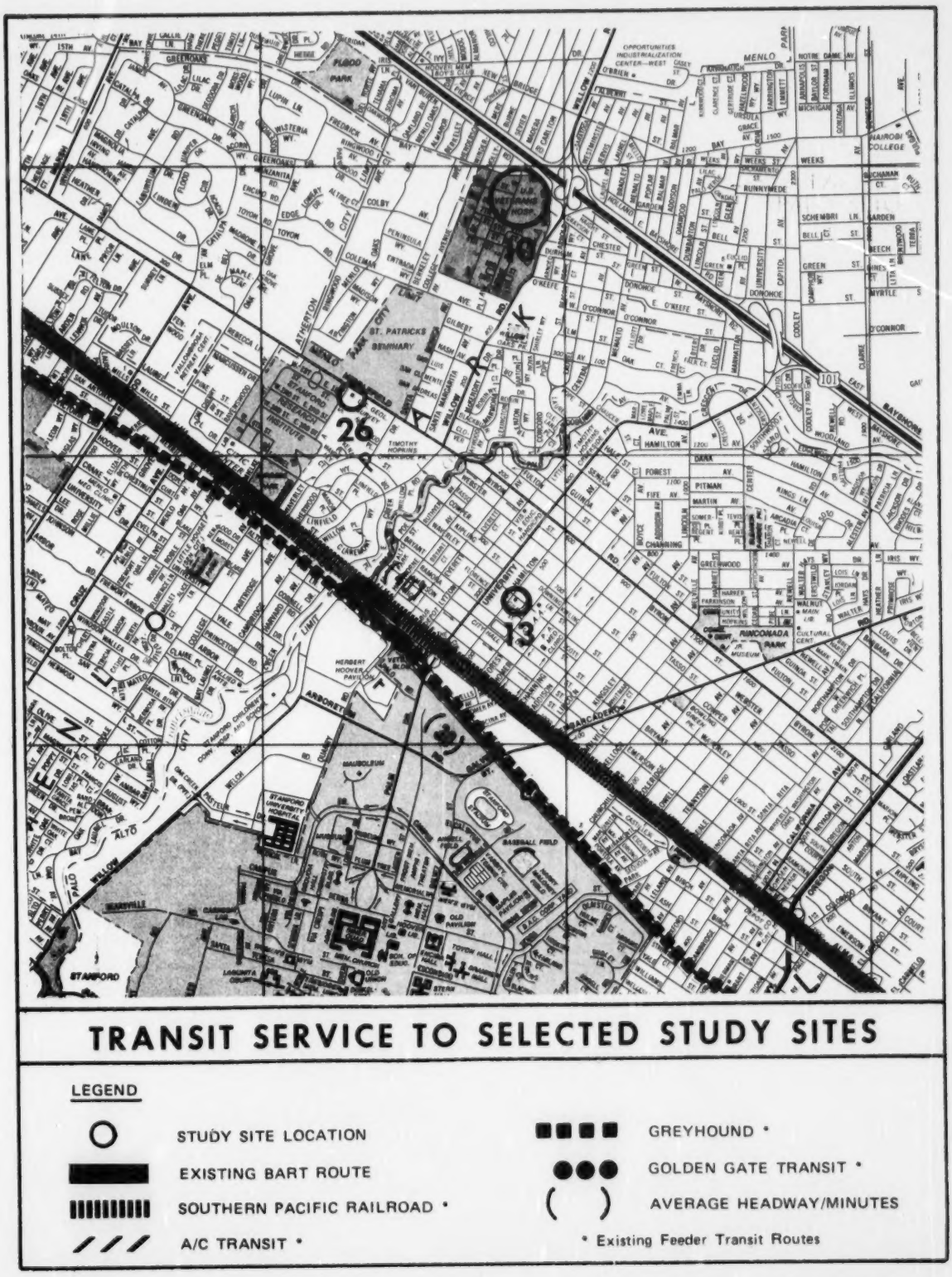


FIGURE 13. ON-SITE INVESTIGATIONS: STUDY SITES 10, 13, AND 26

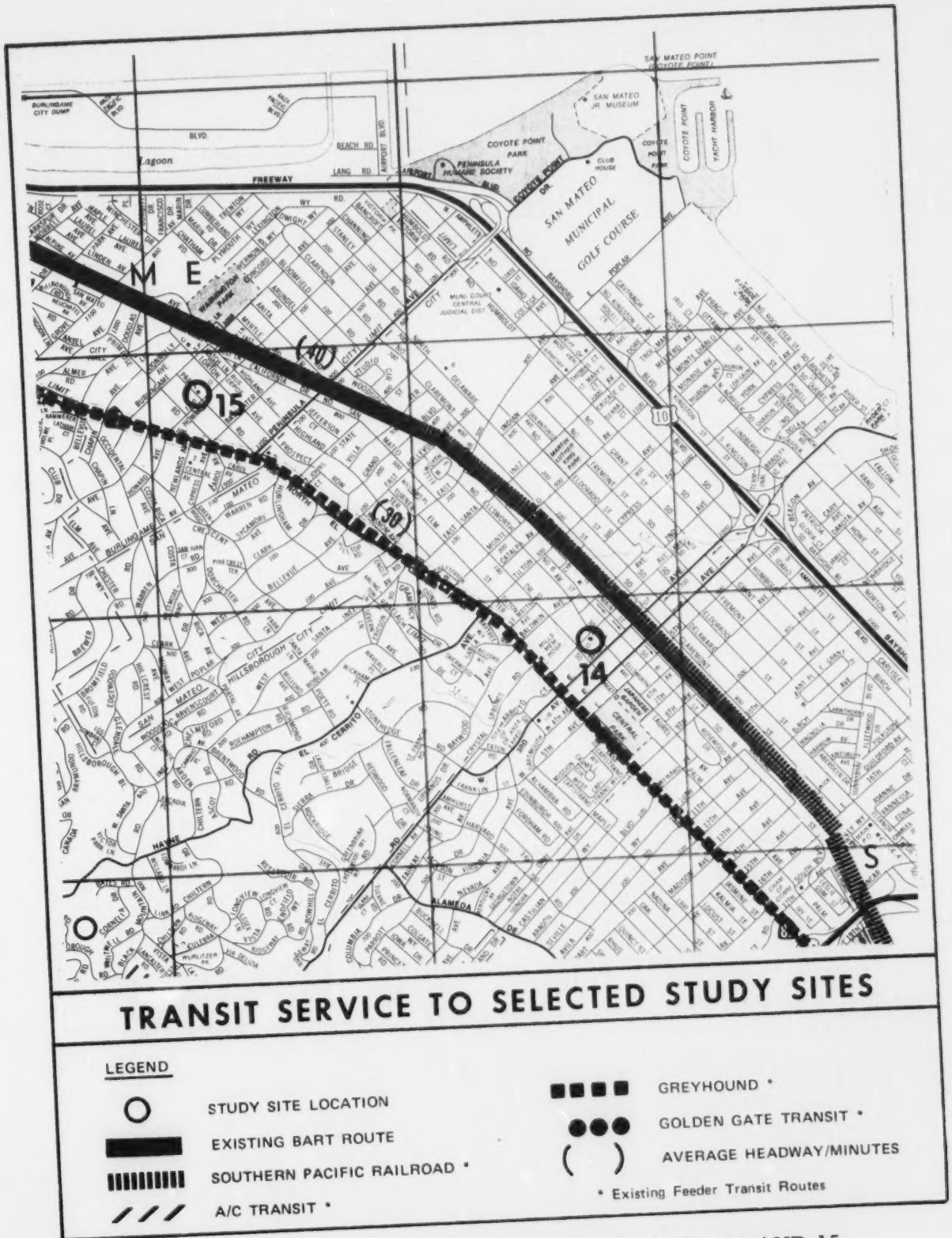


FIGURE 14. ON-SITE INVESTIGATIONS: STUDY SITES 14 AND 15

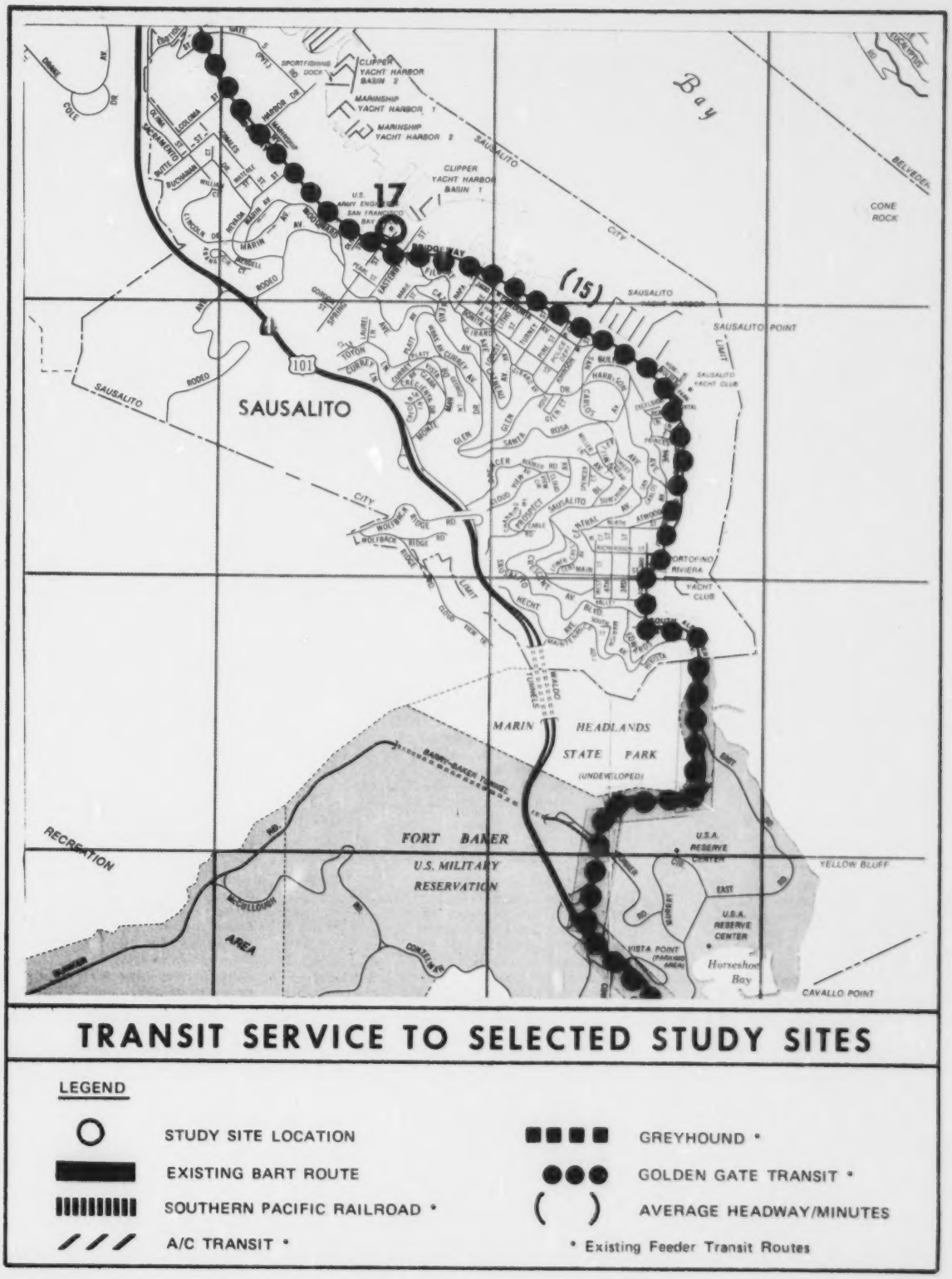


FIGURE 15. ON-SITE INVESTIGATIONS: STUDY SITE 17

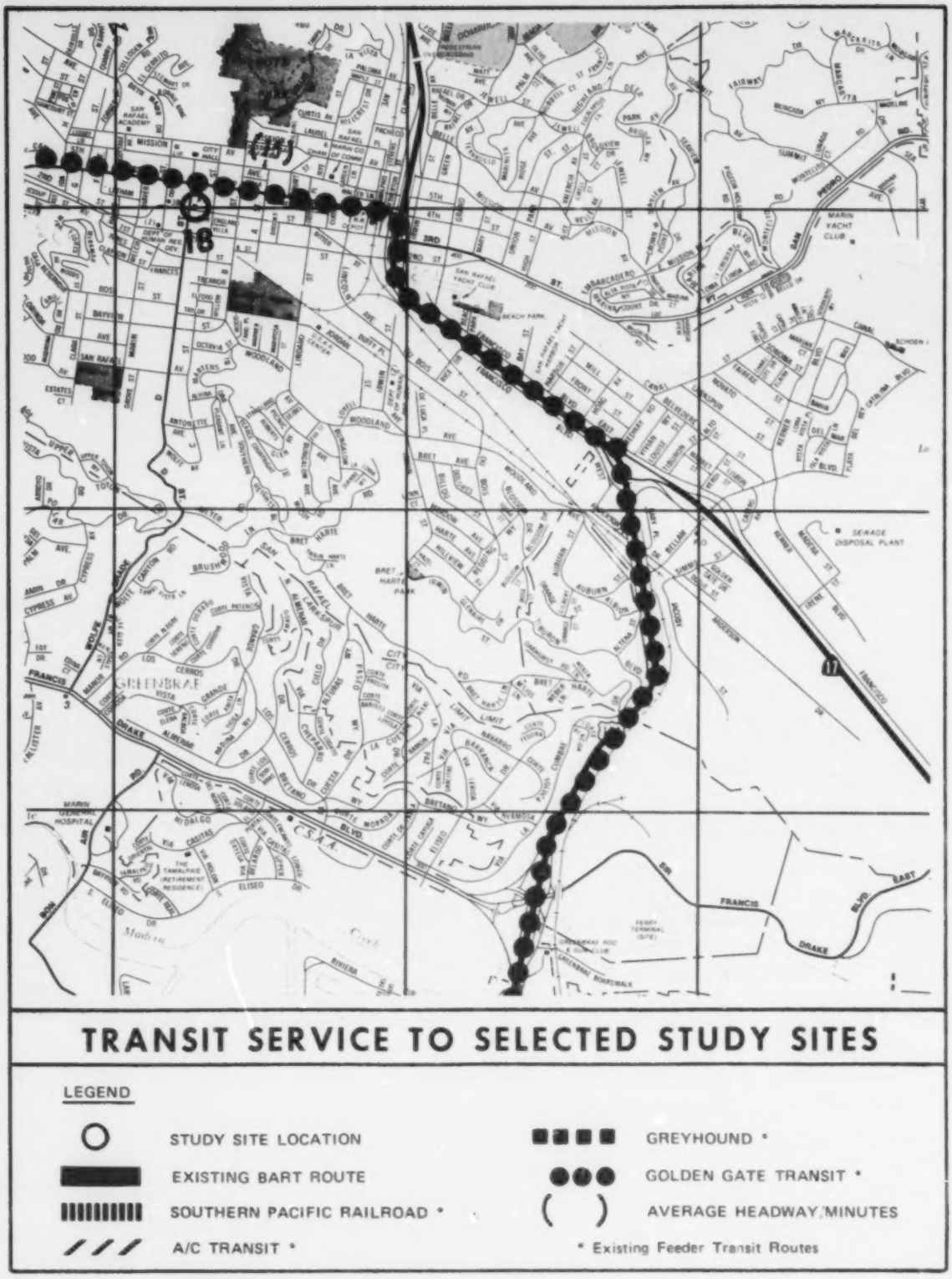


FIGURE 16. ON-SITE INVESTIGATIONS: STUDY SITE 18

FIGURE 17. ON-SITE INVESTIGATIONS: STUDY SITE 19

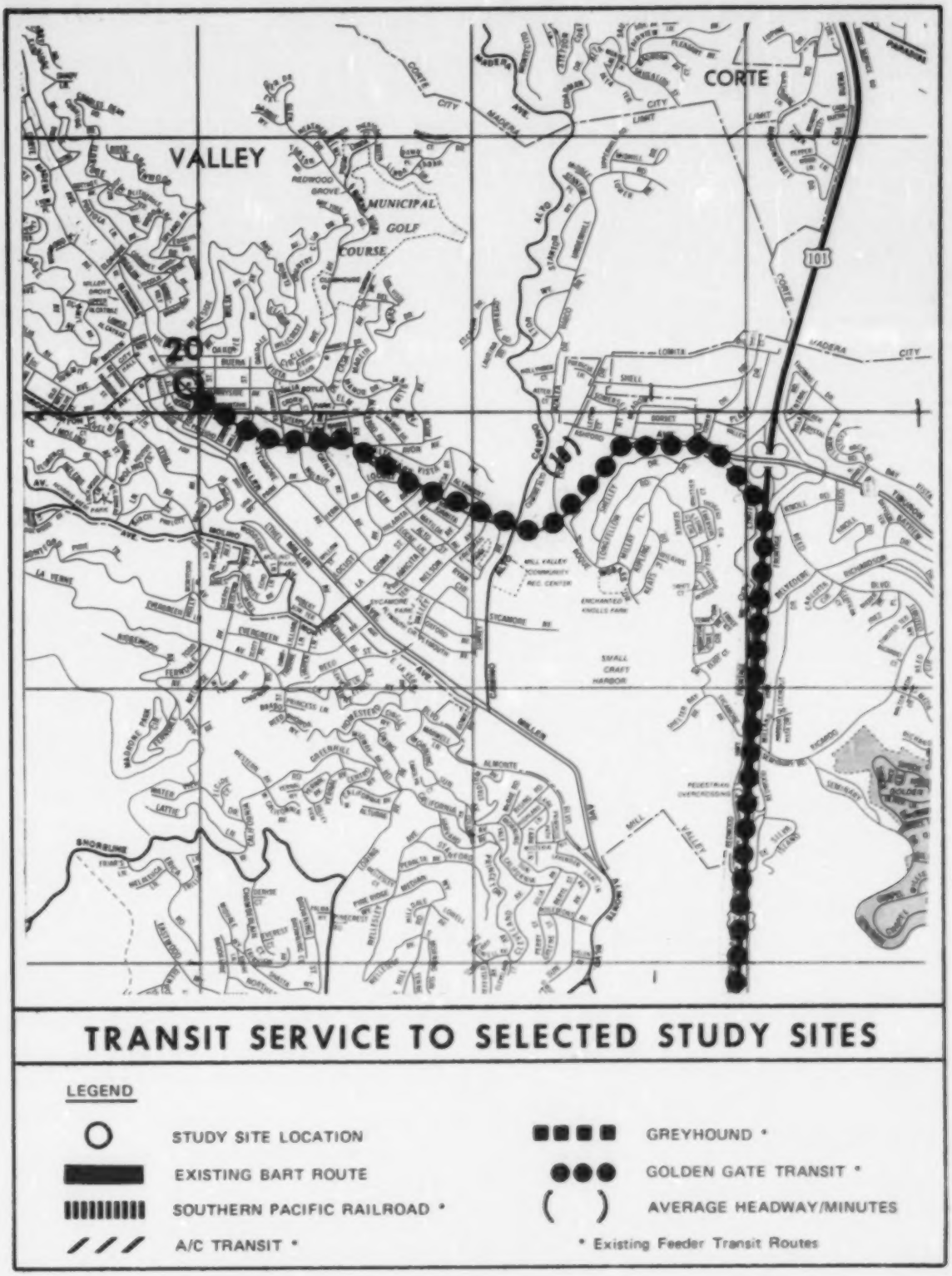


FIGURE 18. ON-SITE INVESTIGATIONS: STUDY SITE 20

FIGURE 19. ON-SITE INVESTIGATIONS: STUDY SITE 23

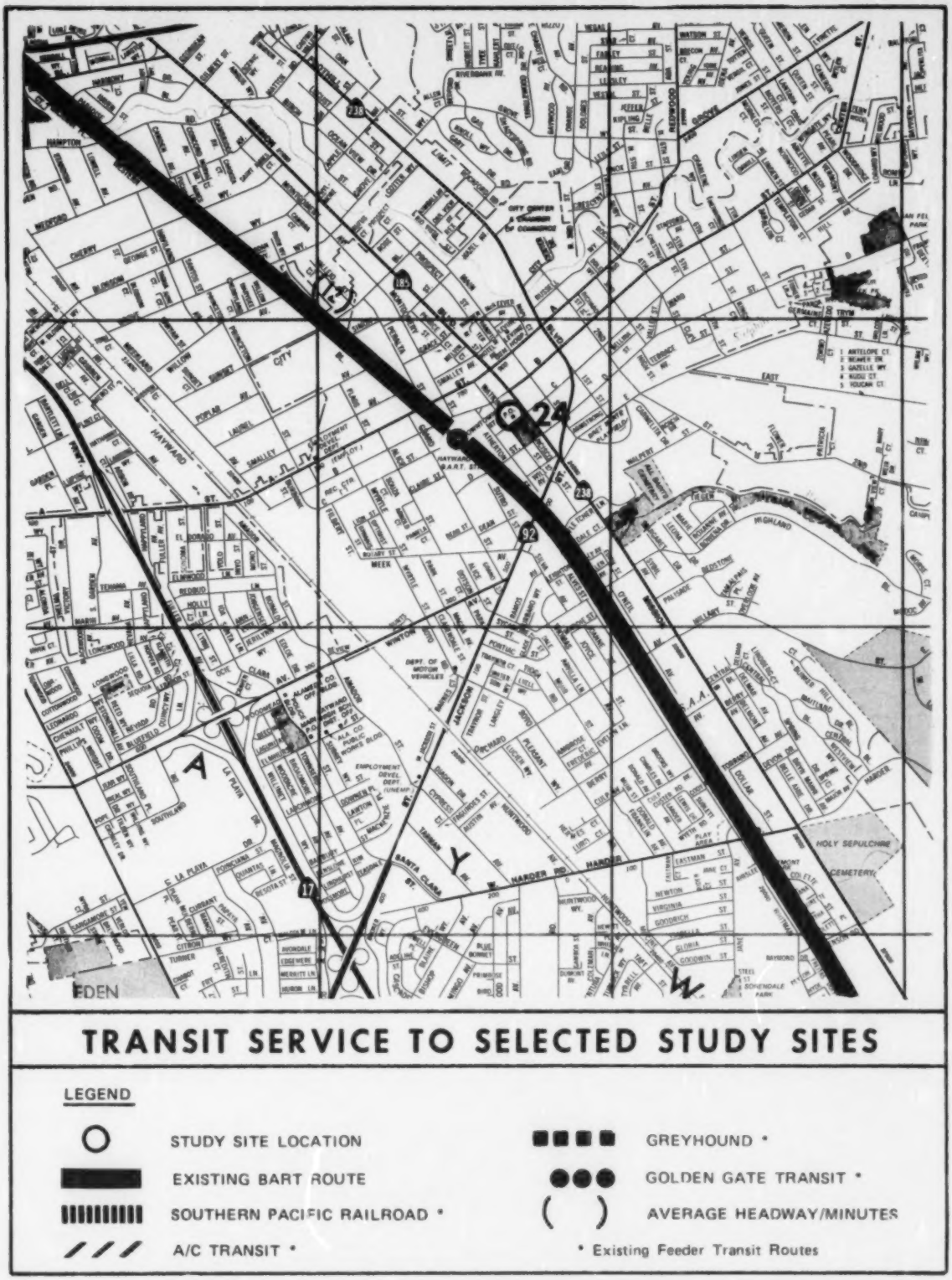


FIGURE 20. ON-SITE INVESTIGATIONS: STUDY SITE 24

FIGURE 21. ON-SITE INVESTIGATIONS: STUDY SITE 25

STUDY SITE 1: Berkeley Post Office
2000 Allston Way, Berkeley

Currently, the Berkeley Post Office is served by 35 truck spaces, 8 vehicular spaces, and approximately 100 feet of curb space. However, because the Post Office is located in a rather well-developed section of Berkeley, there is very little potential for expanding the existing parking lot facilities. With the exception of the curb parking, use of the available space is restricted to government employees' vehicles. Even if this were not the case, the installation of a park-n-ride facility would still be highly questionable; the available facilities are almost totally utilized by government vehicles, not only for parking but also for maneuvering. Adjacent to the Post Office are two privately owned parking lots, including the Hink's parking structure (two levels, one block wide, 400 feet long) on the south side of Kittredge and a small "park-and-lock" lot on the north side of Allston.

STUDY SITE 2: Department of Agriculture Research Laboratory
800 Buchanan, Albany

The Department of Agriculture Research Laboratory employs approximately 400 persons and is served by a ground-level parking lot consisting of approximately 310 parking stalls. Use of the lot is not limited, and both employee and visitor parking is available at no cost. However, the facility engineer, Mr. Gustafson, indicated that the administration would not be very receptive to the idea of opening up the parking lot to the general public. The primary reason for this reluctance is a stated fear that, by allowing general use of the parking lot, the facility would be inviting theft. In addition, he noted that the existing facilities are almost fully utilized by employees and visitors, and that even during the current low point in their employment the parking lot is still quite full. The research laboratory grounds consist of a substantial amount of open space; however, most of this land is landscaped, and the remainder is either used for agriculture experiments or reserved for future building sites. Mr. Gustafson agreed that, if needed, more parking spaces could be provided. However, he reiterated that the present parking lot adequately meets the needs of the facility and that there would be very little interest in providing

additional spaces for use by commuters. (Information on the number of employees driving their vehicles to work can be obtained by contacting Mr. Jack Meehan at the laboratory.) Bus service is provided by AC Transit along Buchanan Road at regularly scheduled intervals.

STUDY SITE 3: Veterans Administration Hospital
150 Muir Road, Martinez

The Veterans Administration Hospital in Martinez employs 909 persons and serves inpatients, visitors, and outpatients. A total of 746 parking stalls are available at the facility, 725 of which are generally occupied. The parking lots are available to visitors, outpatients, employees, volunteers, administrators, consultants, and inpatients--all at no cost. According to Mr. Muggli, the Assistant Chief Engineer at the facility, a recent survey has revealed that employees have formed approximately 40 carpools and that each carpool serves approximately 2.2 persons. In addition, 435 employees drive to work in single-occupant vehicles. The hospital owns a substantial amount of vacant land adjacent to the existing parking lot. Even though this land is not level, Mr. Muggli estimates that, as a result of grading, it would be possible to add another 400 spaces to this area. However, the hospital has recently been considering using this land in a general expansion program, and its availability for a parking lot is unclear. Another member of the engineering department mentioned an alternative which apparently has been considered--the construction of a structure on the existing parking lot area. A structure would not only increase the number of parking spaces available, but would also tend to deter crime and vandalism. There is a substantial amount of vacant land surrounding the hospital; however, this land is privately owned and generally inclined. Bus service on the M line is provided by AC Transit, Monday through Friday, at approximately 1-hour intervals.

STUDY SITE 4: John Muir National Historic Site
Martinez

The John Muir National Historic Site is currently served by a ground-level parking lot containing 14 parking stalls. Access to this lot is

restricted to visitors only, and commuters are specifically prohibited. According to the ranger in charge of the facility (Mr. P.J. Ryan), the site, which is open to visitors 8 hours per day and 7 days per week, serves approximately 25,000 persons per year. Thus, the existing parking facilities are overtaxed, and there is a recognized need to expand these facilities. Mr. Ryan noted that there is currently serious discussion of converting the lawn adjacent to the visitor center into an additional parking lot. However, this lawn is only 75 feet long by 75 feet wide and therefore would not add much additional parking space. The government is also contemplating the purchase of a vacant lot on the opposite side of the street. This lot is sufficiently large to accommodate 75 to 100 additional vehicles. Finally, there is the remote possibility of extending the existing parking lot into an apple orchard located just below the Muir house. However, this alternative is not being seriously pursued at this time because such a parking lot would create a real eye-sore for visitors looking out the windows of the Muir house. An AC Transit bus stop is located next to the visitor center and is served by a line that connects directly with BART stations.

STUDY SITE 5: Main Post Office
815 Court Street, Martinez

The Main Post Office in Martinez provides 23 parking spaces in addition to curb street parking, and all of these spaces are currently being utilized by government employees' vehicles. The Post Office is located adjacent to the Contra Costa County offices and is therefore situated in a highly developed area. Thus, there is no vacant land immediately surrounding the Post Office that could be converted to a park-n-ride lot. Transit service is not easily accessible, making this site a highly unlikely candidate for a park-n-ride facility.

STUDY SITE 6: Franklin Station Post Office
1351 Second Street, Napa

The Franklin Station Post Office provides 25 parking spaces in addition to curb street parking, all of which is currently being utilized by government employees' vehicles. Access to the parking lot is restricted to

government vehicles only. The Post Office is located in a well-developed section of the Napa central business district and does not have much opportunity for expansion. In fact, there is no vacant land immediately surrounding the Post Office that could potentially be converted into a park-n-ride facility. Local transit service is provided in the area surrounding the Post Office by Napa city buses; however, regional transportation is available through Greyhound or taxis.

STUDY SITE 7: Federal Center
3840 Finley Avenue, Santa Rosa

The Federal Center is located approximately 1 mile off Highway 12 and immediately west of Highway 101. There are currently approximately 125 parking spaces, 75 to 85 of which are in general day-to-day use. While parking is not specifically restricted, Mr. M.L. Dineen, when contacted at the study site, noted that parking spaces are provided for government employees and civilian persons on government business only, and that use of the facilities by commuters would probably be prohibited. There appears to be a considerable amount of vacant land within the existing facility; however, Mr. Dineen was unable to provide specific information regarding projected use of this land. He suggested that this information could be more easily obtained from Mr. Richard Nee, who is the building manager for the northern section of GSA and whose offices are located in Oakland. Mr. Nee, when contacted at his office, indicated that the land at the Santa Rosa facility is in a retention category, which means that the government has no current plans for the future of the facility. (Mr. Nee's offices are located at 1515 Clay Street in Oakland; telephone number 415/273-7386.) The site itself appears to have a lot of potential. However, two major problems seem to exist: (1) The government appears unwilling to allow general public access, and (2) Current transit service is apparently nonexistent. Still, the existing parking lot appears to be underutilized (weeds growing at some of the more remote stalls, no sign of vehicular activity); this is borne out by figures provided by Mr. Dineen.

STUDY SITE 8: Petaluma Post Office
Petaluma

The 25 parking stalls provided at the Petaluma Post Office are currently being used by 28 government vehicles. This high occupancy rate results from the fact that, in several cases, two small mail carriers share the same parking stall. Nevertheless, it is obvious from these numbers that the Post Office itself does not have any parking space available which it can turn over to commuters. As at all Post Offices, access to the parking lot is restricted to government employees and vehicles. This study site is located in the downtown area of Petaluma and therefore is not adjacent to any vacant land that could potentially be converted to a park-n-ride facility. Bus service to the area is provided by Golden Gate Transit Authority and is fairly accessible from the Post Office.

STUDY SITE 9: Federal Supply Warehouse
1070 South San Mateo, South San Francisco

While parking space is not specifically provided at this facility, there does exist the potential for parking in the storage yard itself (a paved area with a perimeter of approximately 300 feet by 300 feet). Access to the storage yard is controlled by a guard and also by a sign which prohibits any public parking. The site is clearly visible to passers-by, perhaps even from a nearby freeway overpass which is currently under construction. Since there is very little material stored in the storage yard, it does not appear that the site is currently being utilized to its full extent. North of the facility, there is additional open space (approximately 200 feet by 125 feet) covered primarily by brush. Public transportation does not appear to be currently available in the immediate vicinity of the warehouse.

STUDY SITE 10: Veterans Administration Hospital
795 Willow Road, Menlo Park

The Veterans Administration Hospital has many different ground-level parking lots with a combined capacity of 650 to 700 vehicles. Between 70 and 80 percent of these parking stalls are currently being used for

day-to-day hospital functions. Use of the parking facilities is reserved for hospital-related trip purposes, and no parking charges are levied. The hospital has quite a bit of open land, most of which is landscaped and therefore probably not suitable for conversion to a park-n-ride lot. Public transportation is provided by buses that run on Willow Road at regularly scheduled intervals.

STUDY SITE 11: Coast Guard Air Station
San Bruno

The Coast Guard Air Station is somewhat isolated from existing transportation facilities, and access to the station is restricted by guards and fences. Because of the problems associated with gaining access to this station, the number of parking spaces actually available was undetermined; however, there does appear to be a surplus of parking spaces in the facility. In addition, there is a great deal of open space within the facility that could serve as a parking lot; of course, the use of this land depends on the access restrictions placed on the land by the Coast Guard. It does not appear that there is currently any transit service provided within the immediate vicinity of the station.

STUDY SITE 12: Federal Records Center
San Bruno

The Federal Records Center provides 51 parking spaces, all of which are required for its day-to-day operation. Parking is in two separate areas, one for visitors and the other for employees. While all existing parking is being utilized, the site does contain a large amount of irregularly landscaped vacant land totaling 60,000 to 100,000 square feet. In addition, there is a great deal of vacant land adjacent to the site and off the main thoroughfares; however, this land is somewhat obscured from the view of the motorists on Highway 380 and Sheath. The existing parking lot does not utilize the available space in an optimum manner, and redesign of the lot could result in quite a few more spaces. Public transportation is not visibly available within the immediate vicinity of the Federal Records Center.

STUDY SITE 13: Main Post Office
380 Hamilton, Palo Alto

The Main Post Office in Palo Alto provides a ground-level parking lot with 22 stalls for its employees and government vehicles, in addition to 9 stalls for general use located on the street. The Post Office is located in a rather congested part of Palo Alto with a small total area, so there is very little room for expansion of the existing parking facility. Because of the high level of activity within the area, use of this lot for a park-n-ride facility does not appear to be too practical. Bus transportation is provided on Waverly at regularly scheduled intervals.

STUDY SITE 14: St. Matthew Station Post Office
210 South Ellsworth, San Mateo

The St. Matthew Station Post Office provides 8 metered spaces on the street and 8 employee parking stalls in a restricted ground-level area. The facility is located in the downtown area of San Mateo, and space appears to be at a premium. The congestion and high level of activity that exist within this area make the facility an unlikely candidate for a park-n-ride lot. Accessibility of the facility to public transportation is undetermined.

STUDY SITE 15: Burlingame Post Office
220 Park, Burlingame

The parking spaces provided next to the Burlingame Post Office include on-street metered spaces and a 97-stall, ground-level city public parking lot. The existing utilization of these facilities is almost 100 percent, despite the 2-hour maximum parking limit. Whether or not the government owns the parking lot is still unclear. However, due to the existing high occupancy rate at the lot, use of the facility by commuters appears to be impractical. Public transportation is provided in the vicinity of the Post Office by bus stops on Howard and El Camino Real as well as the Southern Pacific commuter station.

STUDY SITE 16: PMDS Sales Office
1150 San Mateo, South San Francisco

The PMDS Sales Office, which is located in the warehouse section of town, appears to be generally unoccupied except for two side warehouses located on the site. The survey revealed a ground-level parking lot containing 20 spaces, 6 of which were currently being used. There is no cost associated with parking at the facility, and there do not appear to be any restrictions on who may use the lot. Very little additional land is available at the facility (only a 20-foot by 20-foot plot), so there does not appear to be much potential for expanding the existing parking lot. Neither is there any vacant land close to the site that has potential for conversion to a park-n-ride lot. Public transportation is not apparently accessible within the immediate vicinity of the facility.

STUDY SITE 17: San Francisco Docks and Yard,
Defense Corps of Engineers
Sausalito

The San Francisco Docks and Yard facility provides 3 "buses only" parking stalls and 24 auto parking stalls for general use, in addition to approximately 20 parking spaces inside a government compound. At the time the survey was conducted (approximately 11:30 a.m.), the general-use parking lot was approximately half full (1 bus and 12 cars). Parking within the general-use lot is free of charge; parking inside the government compound is fenced off, and access is therefore restricted. There was no vacant land either within the facility or adjacent to it that showed potential for conversion to a park-n-ride facility. Public transportation is available in the form of Golden Gate Transit bus stops and the Golden Gate Ferry, which is located next to the facility; however, it is quite a long walk from the facility parking lot to the ferry terminal.

STUDY SITE 18: San Rafael Post Office and Federal Building
San Rafael

Located at this facility is a Post Office, civil service offices, a recruiting station, Department of Treasury offices, and selective service offices.

Parking at the facility is provided in a ground-level lot that accommodates 27 vehicles, with additional curb parking for 9 vehicles. At the time of the survey (10:30 a.m.), both the lot and the street parking were being fully utilized. Parking within the lot is generally unrestricted, although some spaces are reserved for employees. There is no additional vacant land on the site that could potentially be converted to a park-n-ride facility; however, there is a small plot of vacant land (100 feet by 130 feet) opposite the facility on Third Street. This land contains a fairly empty gravel parking lot that serves two adjacent buildings (the ownership of this lot is unknown). The availability of public transportation to the site is undetermined.

STUDY SITE 19: Richmond Post Office
Richmond

Parking in the ground-level lot surrounding the Richmond Post Office is divided into sections for employee parking and visitor parking. Of the 32 spaces, 25 are provided for employee parking and 7 are provided for visitor parking. At the time of the survey (9:30 a.m.), 16 employee and 6 visitor stalls were occupied. While there is no vacant land on the site itself, a substantial amount of open space exists in an area immediately surrounding the Post Office. This land has been opened up primarily due to urban renewal projects, and construction is going on all around the study site. A free (2-hour limit) ground-level parking lot is located in the block opposite the Post Office defined by 10th and Nevin. This lot, although partially undeveloped, can accommodate a large number of vehicles and is relatively unused. Parking for the BART station is 3 to 4 blocks to the east of the Post Office. No other forms of public transportation are apparently available in the immediate vicinity of the study site.

STUDY SITE 20: Mill Valley Post Office
Mill Valley

The Mill Valley Post Office is served by a ground-level parking lot that can accommodate 13 vehicles. Use of this lot is restricted to employees

only. At the time of the survey (11:00 a.m.), 8 vehicles were observed to be parked in the lot. There is no vacant land on or adjacent to the study site that could potentially be converted to a park-n-ride lot. The facility is located in downtown Mill Valley and is therefore in an area that is generally congested, with parking space at a premium. Public transportation to and from the study site is provided by the Golden Gate Transit buses which operate on Miller.

STUDY SITE 21: GSA Supply Depot
159 Oyster Point Boulevard, South San Francisco

The parking area that serves the GSA Supply Depot is a large unpaved lot which can accommodate approximately 160 vehicles. Access to this lot is via a dirt road which crosses 7 to 8 railroad tracks and an overpass from the freeway (U.S. 101) and connects with Oyster Point Boulevard. At the time of the survey (8:30 a.m.), the parking lot was occupied by 106 vehicles. Parking at the depot is free of charge, and access is unrestricted. The supply depot is located in an industrial section of South San Francisco with no vacant land nearby. Public transportation to and from the facility is not apparently available in the immediate vicinity.

STUDY SITE 22: South San Francisco Post Office
322 Linden, South San Francisco

The South San Francisco Post Office is served by a ground-level parking lot, containing 20 parking stalls, and 4 parking spaces on the street. Parking in the lot is restricted to employees only; at the time of the survey (9:00 a.m.), the lot was occupied by 16 vehicles. The study site contains no vacant land, nor is there any open space in the area immediately surrounding the Post Office. Public transportation to and from the Post Office is not apparently available within the immediate vicinity of the study site.

STUDY SITE 23: Main Post Office
220 South Livermore, Livermore

The Livermore Post Office is served by a ground-level parking lot that can accommodate 46 vehicles. Access to the lot is restricted to "official vehicles only." At the time of the survey (11:00 a.m.), only 7 vehicles were parked in the lot; however, it can be assumed that most postal vehicles were out delivering mail and that the lot is fully utilized during the morning and evening hours. Although there is no additional vacant land at the study site, it would be possible to provide 20 to 30 more parking stalls through redesign of the existing parking lot. The availability of public transportation to and from the study site is undetermined.

STUDY SITE 24: Main Post Office
822 C Street, Hayward

The Hayward Post Office is served by a ground-level parking lot which contains 55 spaces. Seven of the stalls are marked "reserved," and the remainder of the lot is reserved for "employees and customers." At the time of the survey (12:00 noon), 14 vehicles were observed to be using the lot. The study site does not contain any vacant land nor is there any open space immediately surrounding the site that could potentially be used for a park-n-ride facility. Public transportation to and from the study site is provided by a BART station located two blocks to the west.

STUDY SITE 25: Main Post Office
2417 Central Avenue, Alameda

The Alameda Post Office building is closed and not in use anymore. It is served by a ground-level parking lot that can accommodate 7 vehicles and is reserved for use by postal vehicles only. There is no vacant land on the study site, nor is there any open space in the area immediately surrounding it which could potentially be converted to a park-n-ride facility. The availability of public transportation to and from the Post Office is undetermined.

STUDY SITE 26: Geological Survey Building
Menlo Park

This study site is served by a ground-level parking lot that can accommodate approximately 350 vehicles. At the time this survey was taken (1:00 p.m.), approximately 225 vehicles were using the lot. There is no charge for parking at this facility, and access is unrestricted. The only vacant land on the site is the large front yard (125 feet by 200 feet) which has just recently been landscaped. There is also some open land in areas immediately surrounding the study site. The availability of transit to and from the Geological Survey building is undetermined.

SUMMARY OF ON-SITE INVESTIGATIONS

As a result of the on-site investigations, numerous sites were generally considered unsuited or inappropriate for use as park-n-ride facilities. On the other hand, a number of sites visited appeared to offer considerable potential for such use; these study sites are listed in Table 2.

The primary consideration given in the sites selected in Table 2 was the existing or potential availability of parking spaces. If Federal lands were to be used for park-n-ride lots, it was assumed those parcels requiring the least conversion costs would be most likely to be considered; lands which required extensive modifications were felt to be at a disadvantage for serious consideration.

The sites given in Table 2 represent a number of Federal agencies. Also, their locations are proximate to a variety of transit services. Implementation of a program to coordinate these agencies and transit operators is deemed necessary to establish the desired park-n-ride facilities and to ensure their usefulness to the transit operators in encouraging more extensive transit use as a consequence of this change-of-mode alternative.

TABLE 2. FEDERAL LANDS WITH POTENTIAL FOR USE AS PARK-N-RIDE FACILITIES

Study Site	Description	Location
3	Veterans Administration Hospital	Martinez
4	John Muir National Historic Site	Martinez
7	Federal Center	Santa Rosa
10	Veterans Administration Hospital	Menlo Park
19	Richmond Post Office	Richmond
21	GSA Supply Depot	South San Francisco
25	Main Post Office	Alameda
26	Geological Survey Building	Menlo Park

Table 3 presents the Federal agencies and transit operators whose coordination would be needed to investigate further establishment of park-n-ride lots on parcels listed in Table 2. For land parcels too distant to walk to the transit service, discussions would have to consider shuttle service or a fixed-route addition to include the Federal site. For Federal lands within walking distance of transit, these deliberations would focus primarily on public information and awareness of the availability of such a service. Given sufficient impetus to proceed, it is not envisioned that major institutional problems would be encountered, nor is it felt that the costs of providing these facilities would be that significant.

The areas of study that need to be evaluated further prior to actual program implementation are:

- Institutional Arrangements--More detailed discussions need to be held with specific agencies and transit operators with regard to specific parcels of land under consideration for conversion to park-n-ride lots. These discussions should center on cooperative arrangements which can be made to ensure mutual reinforcement of each agency's actions in achieving a successful project.

- Cost Estimates--Detailed estimates need to be prepared to identify the costs associated with each project. These costs should be divided into capital costs (e.g., site modifications) and annual operating costs (e.g., advertising, maintenance). Arrangements need to be clarified among the participating Federal agencies and transit operators regarding respective financing responsibilities.

- Preliminary Project Design--As part of the cost estimates, preliminary project designs will need to be prepared for each site under consideration. At a minimum, the information to be furnished should contain the exact location of the park-n-ride facility; size of the lot (number of parking spaces available); and periods of operation (e.g., weekdays, weekends). Preliminary architectural sketches would be useful in this evaluation.

- Supportive Measures--As a specific project comes under evaluation, an analysis of the supportive measures necessary to make the project attractive needs to be made. In

TABLE 3. FEDERAL AGENCIES AND TRANSIT OPERATORS INVOLVED IN POTENTIAL PARK-N-RIDE FACILITIES

Study Site	Federal Agency	Transit Operator
3	Veterans Administration	AC Transit
4	General Services Administration	AC Transit
7	General Services Administration	Golden Gate Transit
10	Veterans Administration	Southern Pacific RR; Greyhound
19	Postal Service	BART
21	General Services Administration	Southern Pacific RR
25	Postal Service	AC Transit; BART
26	Geological Survey	Southern Pacific RR; Greyhound

cooperation with the transit operators, a marketing and public information campaign needs to be initiated.[1] As part of these considerations, details need to be worked out regarding community relations and information, signs and equipment, publicity on transit services and fares, etc.

- Potential Demand--Projecting demand for the use of these facilities is difficult for a variety of reasons. First, demand is a function of many of the factors discussed above--convenience, physical layout, adequate public information, and attractiveness. These factors relate to the supply of parking. The demand for the parking spaces is even more difficult to predict and is a function of available alternatives, socioeconomic characteristics, and levels of transit service.

With regard to the last consideration--potential demand--a difficulty is encountered in defining the general "market area." While it is accepted as larger than the service areas covered by transit services (either shuttle or fixed route), the potential market area for park-n-ride users varies widely with specific regional and areal characteristics.

It was originally proposed that the Federal action program decided upon was to be primarily for Federal employees. In terms of this study, such an approach has several disadvantages. First, the potential demand for park-n-ride facilities on Federal lands is significantly reduced by providing them only for Federal employees' use. While the Federal employee population in the Bay Area is quite sizable in absolute numbers (approximately 80,000), in terms of the total region's employment force, Federal employees are not as significant. Second, even if it were desirable to use the proposed park-n-ride facilities for Federal employees only, an enforcement and monitoring program would need to be established. For these reasons, it is recommended that any facilities that would be implemented be open to all potential users to ensure maximum

[1] For general guidelines in this area, see "A Generalized Public Transit Marketing Policy--Action Plan for Improvements in Transportation Systems in Large U.S. Metropolitan Areas," prepared by London Transport Executive for U.S. Department of Transportation, DOT-OS-10192, July 1972.

demand, and that all reasonable measures be taken to actively promote the facilities as open to public use. A possible course of action to be taken, given the uncertainties regarding potential demand, would be to initiate several demonstration or pilot projects and to monitor their usage.

SUMMARY

This study has evaluated the potential use of Federally owned lands for park-n-ride facilities. Included in the investigation are recommendations for a number of sites that appear quite attractive for such use. In this regard, a number of steps have been identified for actions to be initiated to further examine critical issues relating to conversion of specific land parcels. These issues--institutional arrangements, cost estimates, preliminary project design, supportive measures, and potential demand--should all be analyzed more fully before embarking on any individual projects.

The remainder of this section discusses briefly two separate and distinct issues:

- Other environmental considerations (e.g., air pollution and energy conservation)
- Planning guidelines for program implementation

OTHER ENVIRONMENTAL CONSIDERATIONS

A basic premise for initiating this study has been that park-n-ride facilities will reduce vehicle miles of travel (VMT) and thereby improve air quality and conserve energy. As such, establishment of these facilities is a desirable action to be encouraged by Federal agencies as a positive program.

Recent data, however, suggest that park-n-ride facilities may be <u>significantly</u> less effective in reducing auto emissions than originally estimated.

> "The new information explicitly disaggregated vehicular emissions into a number of component parts previously unaddressed by EPA--cold starts, hot soaks, and diurnal breathing losses. While these data are still preliminary, the implications of this

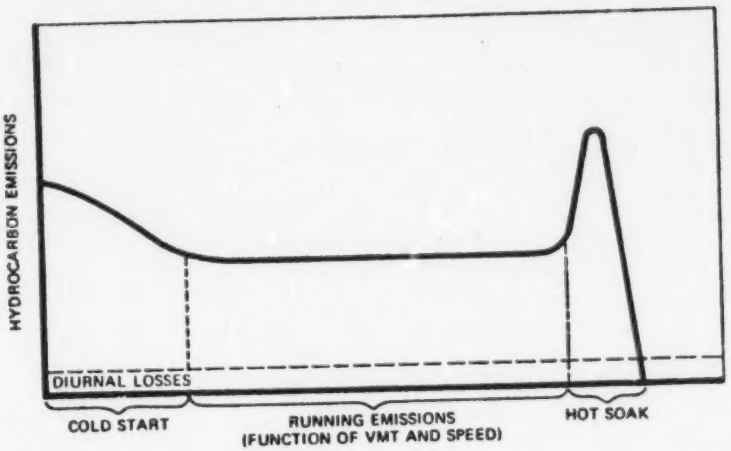
> information for control tactics to be recommended are considerable. The net result of EPA's revised procedures for calculating vehicular emissions is to place emphasis on trip making and VMT reductions for air quality improvement. The relative importance of trips versus VMT reduction varies over time and requires careful analysis on a region by region basis. Of considerable importance is that many previously proposed control measures for air quality improvement are of questionable value in light of the revised procedures; some tactics, in fact, may actually increase emissions while reducing VMT.... The fundamental conclusion...is that those control tactics which would either reduce the average trip length or increase average speed but not affect the number of trips made (e.g., park-and-ride, ramp metering) may be considerably less effective in reducing automobile emissions than those tactics which would be directed at reducing trip-making activity."[1]

Figure 22 presents a typical hydrocarbon emissions pattern, illustrating the various components of the total emissions cycle. As shown in the figure, emissions from running exhaust are relatively minor compared to total emissions, especially in 1980 and 1985. This suggests that for later years strategies directed at reducing VMT, but not affecting trip-making activity, will have only modest impacts on emissions--significantly less than originally estimated.

A similar situation exists for energy consumption, where there is a dramatic difference in fuel economy between short and long trips. On a per-mile basis, the fuel consumed in short trips is significantly higher than for long trips. Thus, if one were interested in fuel economy expressed in miles per gallon (MPG), one would tend to drive longer trips. This is clearly a false fuel economy since the <u>total</u> fuel consumed in going between two points is obviously more important than the value in going

[1] Planning Environment International, "Transportation Management Tactics for Air Quality Improvement--San Diego Region," prepared for Comprehensive Planning Organization of the San Diego Region, December 1975.

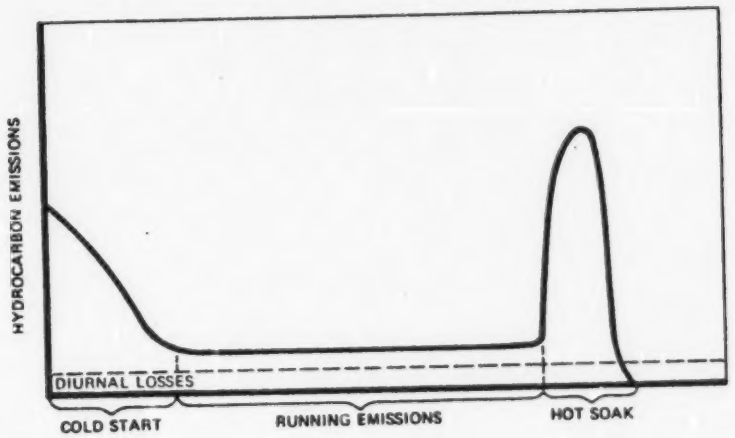
CIRCA 1972



COMMENTS

- MAJOR REDUCTION IN RUNNING EXHAUST EMISSIONS
- TRIP END RELATED EMISSIONS UNCHANGED

CIRCA 1980



- PROPOSED CONTROLS ON EVAPORATIVE LOSSES IN 1980 (I.E. DIURNAL AND HOT SOAK EMISSIONS)
- TRIP END RELATED EMISSIONS VERY IMPORTANT

CIRCA 1985

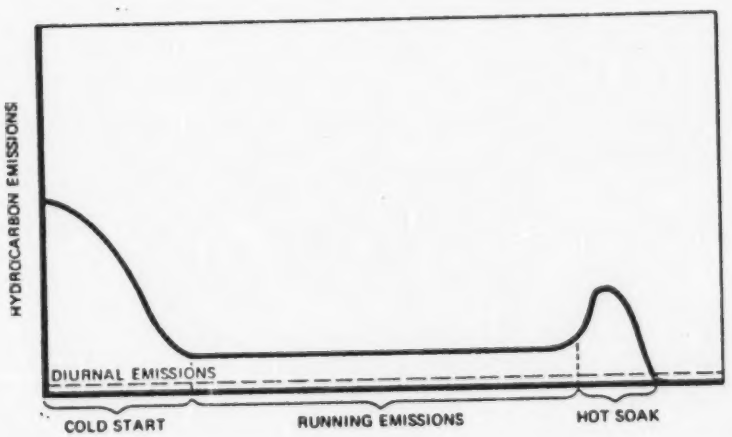


FIGURE 22. TYPICAL HYDROCARBON EMISSIONS PATTERNS (LDV)

between these points.[1] In keeping the total fuel consumption in mind, one would also have to consider the energy consumed by the transit system. From an energy conservation perspective, perhaps other forms of bus collector systems would be best (e.g., demand-responsive).

PLANNING GUIDELINES FOR IMPLEMENTATION

Many of the guidelines that direct location of park-n-ride lots have implicitly been used in this analysis. For purposes of future Federal land acquisitions, where it may be desirable to implement a park-n-ride facility in the initial planning stages, these general guidelines are reiterated:[2]

- The locations should be in dense travel corridors approaching high-density employment centers.
- Sites should be adjacent to a radial freeway, beyond the location of serious congestion.
- Access to the park-n-ride facility should be convenient for both the bus and the automobile.
- The cost of development should be minimized; in this case, existing Federal facilities for parking should be used wherever possible.
- The parking facility should be located on land parcels of sufficient size to allow for both adequate traffic circulation and pedestrian safety and convenience; the size should also provide for potential future expansion if the demand warrants such expansion.
- Use of park-n-ride facilities should be free of charge; parking fees will substantially discourage use of this mode. Furthermore, use should be actively promoted.

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[1] U.S. Environmental Protection Agency, "A Report on Automotive Fuel Economy," February 1974.

[2] An excellent summary of these principles, as well as local experiences with park-n-ride facilities, is presented in "Locating and Operating Bus Rapid Transit Park-Ride Lots--A Synthesis of Experience and Some Preliminary Planning Guidelines," D.M. Gatens, prepared for Urban Mass Transportation Administration, August 1973.

As stated in the section on the Federal land management process, consideration should be given to possibly modifying the standard site investigation reports to incorporate a preliminary assessment of future land acquisitions and their potential use as park-n-ride facilities. In the long run, such a modification in process could be more cost-effective and integrated more directly with other ongoing regional transportation planning efforts.

APPENDIX

SUMMARY OF MAJOR FEDERALLY OWNED LANDS IN THE BAY AREA, BY AGENCY AND LOCATION

		DOT - USCG	GSA	USPS	VA - VA Hosp.	DCD - Army Corps of Engr.	Dept. of Int. - NPS	AEC	Dept. of Commerce	NASA	Treas. Dept.	USDA	DOT - FAA	Dept. of Justice	FCC	Dept. of Interior	HEW	USIA	CIA
Alameda County (15 cities)	Alameda	774,885 .67U 1	153,551 .19.1U 2(2)	172,200 .5U 4(1)								291,763 16.6U 1							
	Albany																		
	Berkeley			64,872 1.1U 4(1)									50,256 11.7U 1						
	Fremont																		
	Hayward			9,695 .6U 4(1)											4,18 1	6,540 1208 1			
	Livermore			20,161 .8U 4(1)	395,079 118.3R 1			2,666,795 631.3R 161.5U 2(2)											
	Pleasanton										120,264 8.5R 1								
	County Prop.					.. 86.4U 1													
Contra Costa County (7 cities)	Concord	1,209 24.5U 2(1)																	
	Martinez			3,500 .5U 2(1)	398,823 35U 1			16,460 8.7U 1											
	Richmond	3,748 .7R 2(1)		19,377 .3U 2(1)													.. 2R 1		
	County Prop.																		
Marin County (14 cities)	Indiana	.. 239.3R 8(1)																	
	Fort Barry	6,061 224.4R 8(2)																	

LEGEND
Square Footage of Building
Land Acreage--U = Urban; R = Rural
No. Sites in County (No. of County Sites in the City)

		DOT - USCG	GSA	USPS	VA - VA Hosp.	DOD - Army Corps of Eng.	Dept. of Int. - NPS	AEC	Dept. of Commerce	NASA	Treas. Dept.	USDA	DOT - FAA	Dept. of Justice	FCC	Dept. of Int. - USGS	BLM	HEW	UMTA	CIA
Marin County (14 sites) (continued)	Inverness	653 75, 5R S(1)																		
	Point Reyes Station	81,762 60,762R S(1)					72,620 60,459R 2(1)													
	San Rafael					-- 4, 1U 2(1)														
	Sausalito	7,913 39R S(1)					187,514 60U 2(1)													
	Tiburon	193,888 45, 3 S(1)							190,368 65, 3 1											
	Mill Valley			7,096 , 5U 1			9,723 483, 8U 2(1)													
	County Prop.	57R S(1)																		
Napa County (3 sites)	Napa			15,843 , 7 2(1)		-- 4, 8 1														
	St. Helena			4,893 , 5 2(1)																
San Francisco County (18 sites)	San Francisco	103,648 28U 2(1)	3,705,810 35, 2U 8	1,284,516 25, 5U 2	6,771,991 190, 5U 1		84,181 29U 1		50,572 2, 3U 1		245,890 3, 9U 2							442,726 36, 8U 1		
	County Prop.	14,337 120R 2(1)																		
San Mateo County (17 sites)	Burlingame			14,257 1, 3U 3(1)																
	Menlo Park		55,200 9n, 2U 6(1)		971,888 96, 2U 1			106,634 40, 1R 1								-- 10, 3U 1				
	Montara	9,360 7R 4(1)																		

LEGEND

Square Footage of Building
Land Acreage--U = Urban; R = Rural
No. Sites in County (No. of County Sites in the City)

		DOT - USCG	GSA	USPS	VA - VA Hosp.	DCD - Army Corps of Eng.	Dept. of Int. - NPS	AEC	Dept. of Commerce	NASA	Treas. Dept.	USDA	DOT - FAA	Dept. of Justice	FCC	Dept. of Int. - USGS	BLM	NEW	USEA	CIA
San Mateo County (17 sites) (continued)	Pescadero	10,607 12R 4(1)																		
	Redwood City			7,220 .8U 3(1)																
	San Bruno	116,004 106. 5U 4(2)	116,004 114U 6(1)																	
	South San Francisco		762,219 38. 4U 6(4)	7,493 .5U 3(1)																
	County Prop.								3. 1R 1											
Santa Clara County (4 sites)	Moffett Field								1,876,758 365. 9 1											
	Palo Alto			24,000 . 6 2(1)	1,081,316 92. 8 1															
	San Jose			55,526 1. 5 2(1)																
Solano County (4 sites)	Dixon																		29,935 877. 8R 1	
	Rio Vista	15,857 4. 2R 2(1)																		
	Vallejo	5,200 1. 4U 2(1)	15,925 . 6U 1																	
Sonoma County (5 sites)	Bodega Bay	4,998 1. 7 2(1)																		
	Geyserville					-- 5,643 1														

LEGEND

Square Footage of Building

Land Acreage--U = Urban; R = Rural

No. Sites in County (No. of County Sites in the City)

		DOT - USCG	GSA	USPS	VA - VA Hosp.	DOD - Army/Corps of Engr.	Dept. of Int. - NPS	AEC	Dept. of Commerce	NASA	Treas. Dept.	USDA	DOT - FAA	Dept. of Justice	FCC	Dept. of Int. - USGS	BLM	HEW	UMA	CIA
Sonoma County (5 sites) (continued)	Healdsburg																			13,461 402, 6R 1
	Petaluma	160,063 835, 7R 2(1)		18,726 , 9U 1																
	Total	21	17	16	5	5	4	3	3	2	2	1	1	1	1	1	1	1	1	1

LEGEND

Square Footage of Building

Land Acreage--U = Urban; R = Rural

No. Sites in County (No. of County Sites in the City)